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12th Annual Air Transport Progress Issue | Including 22nd Edition, ATA Facts & Figures

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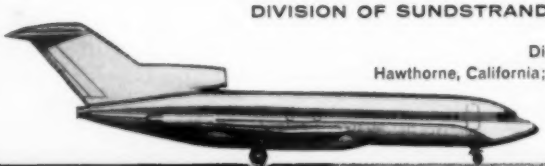

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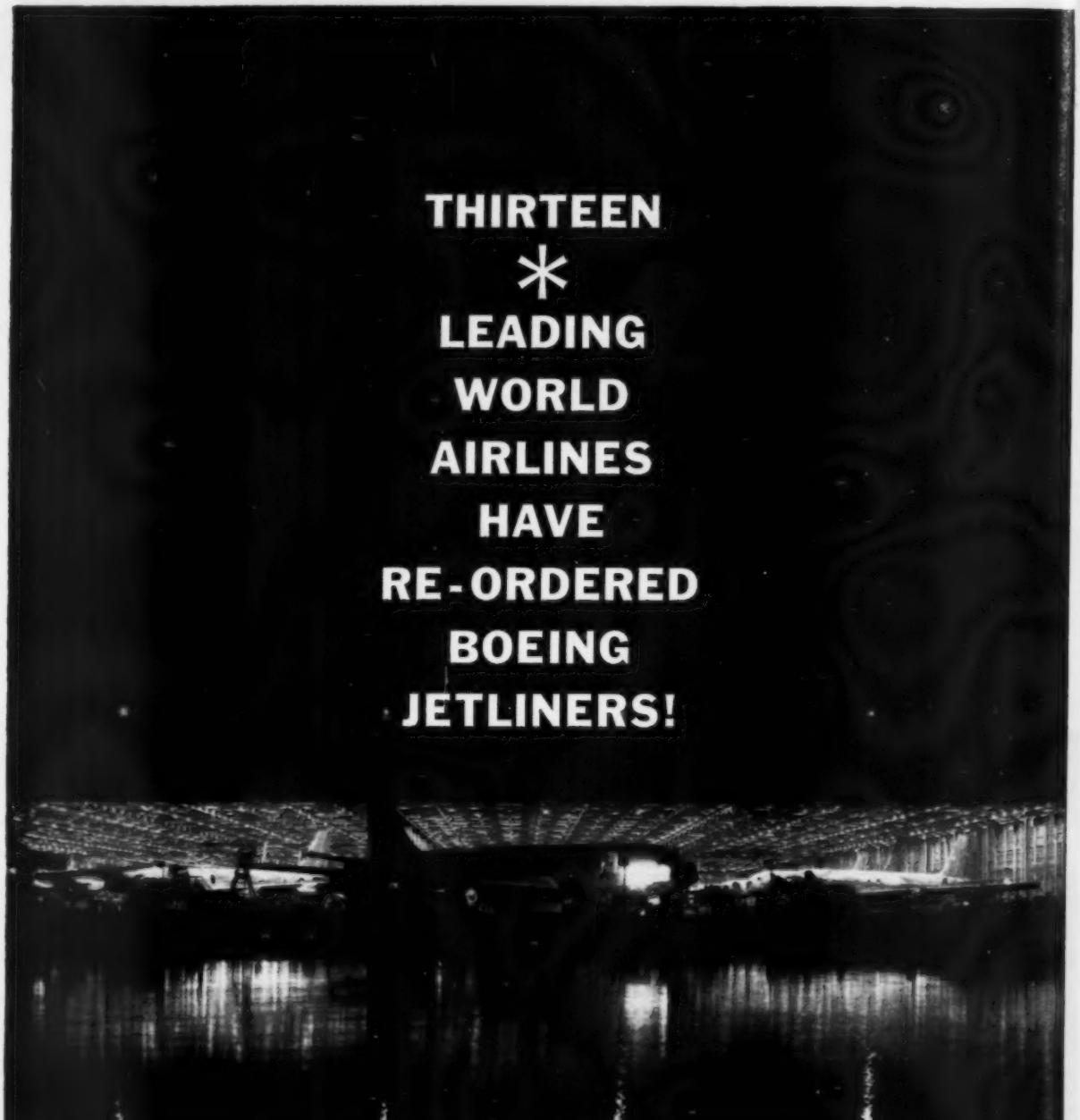

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WORLD AIR TRANSPORTATION

THE WORLD'S AIRLINES

Competition With Jets Hits New Peak in 1960 44

World Airline Ranking 45
International Traffic 46
Top Jet & Turboprop Opns .. 46
Turbine Results in 1960 47
World Airline Statistics 48
1961 Transport Deliveries 49
Transatlantic Boom Continues . 50

AIR CARGO

At Long Last, Cargo Tops a Billion 52

Air Freight Traffic 53
Local Cargo Results 54
Air Cargo Revenues 54
Freight Forwarder Statistics .. 55
Trunk Traffic Rankings 55

THE U.S. TRUNKS

Jet Seat Battle Juggles Trunk Rankings 56

Coach to Eclipse 1st-Class in '61 58

Domestic Trunk Finances 56
Trunk Traffic Ratings 57
1960 On-Time Rating 57
Coach at Crossroads 58
Six-Year Coach Analysis 58
Assets Pass $3 Billion 62
Jet Operating Costs 64
Turboprop Operating Costs 65
U.S. Airline Transports 66
Trunk Airline Statistics 73
Fuel/Avgas Consumption 83
Late Financial Results 111

THE U.S. LOCALS

Local Revenues Climb 19.5% in '60 85

Three-Year Look at Locals 85
Local Traffic Rankings 87
1960 On-Time Rating 87
Daily Traffic Ranking 91
Local Airline Statistics 100

HELICOPTER OPERATIONS

'Copters Up 39% in Passengers 107

AIR TAXI

Air Taxi Fleet Doubles in Five Years 108

DEPARTMENTS

Personal View 15
Letters 22
Air Transport Trends 29
Industry at a Glance 33
News in Brief 113
En Route 154

THIS MONTH'S COVER—The "World of Airline Insignias" as pictured by *AIRLIFT's* staff artist. For a complete legend of the insignias and the airlines they represent, see p. 22. **Also in this issue:** Air Transport Assn.'s 22nd Edition of Facts & Figures . . . Pages 119 to 150.

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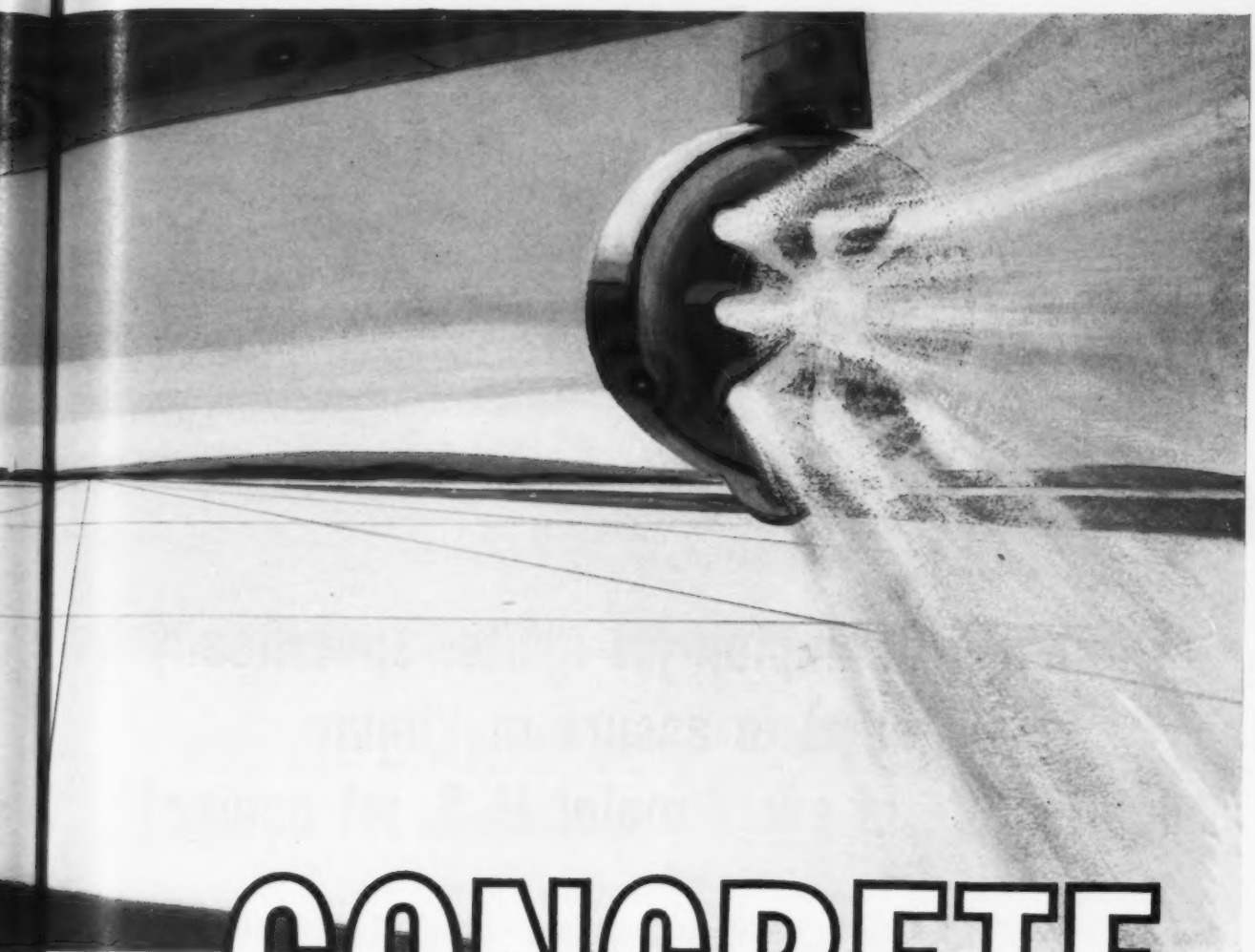

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Model of Aircraft	Type of Engine	Champion Igniter
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		AA37S
	P&W JT3D	AA37S
	P&W JT4A	AA16S
		AA42S
Convair 880	GE CJ805-3	FHE-100-6
990	GE CJ805-23	AA30S-1
Douglas DC-8	P&W JT3C	AA15S
		AA37S
	P&W JT3D	AA37S
	P&W JT4A	AA16S
		AA42S
Lockheed Electra	Allison 501-D13	FS-89-1

IGNITERS FOR AUXILIARY FLIGHT POWER EQUIPMENT

Make of Engine	Model of Engine	Champion Igniter
Airesearch	FAC250-29	AA34S-1
	ATSF100-21, 32	FHE-53-5
Airesearch	FAC250-14	AA34S-1

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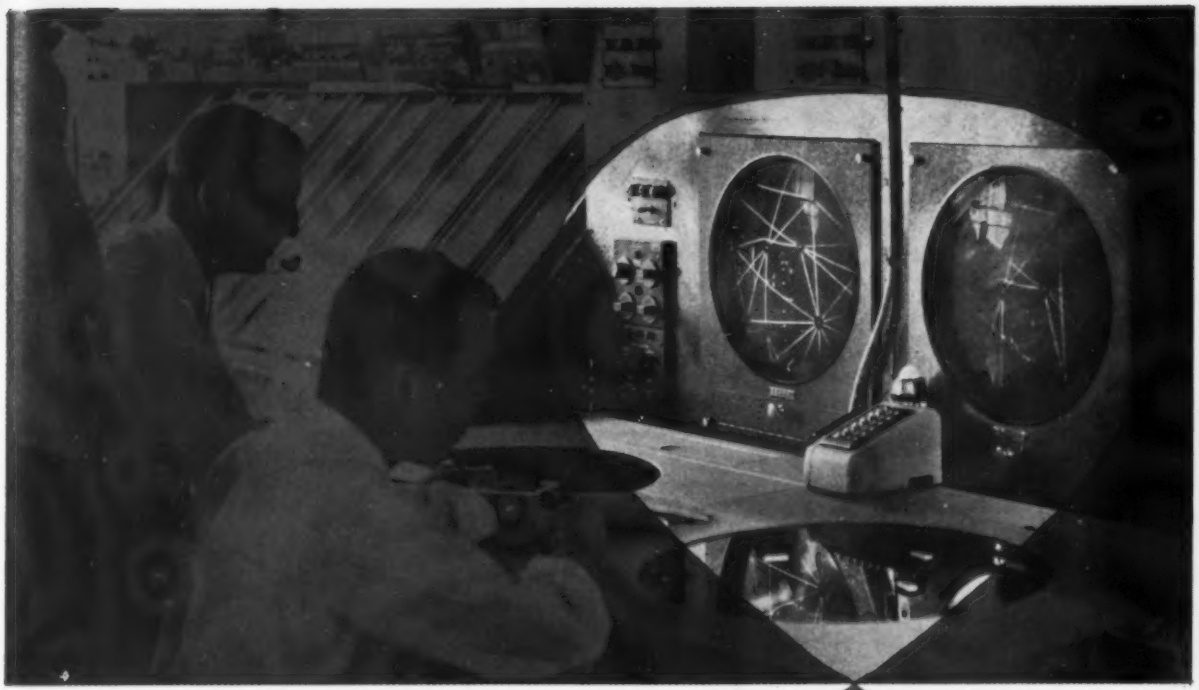

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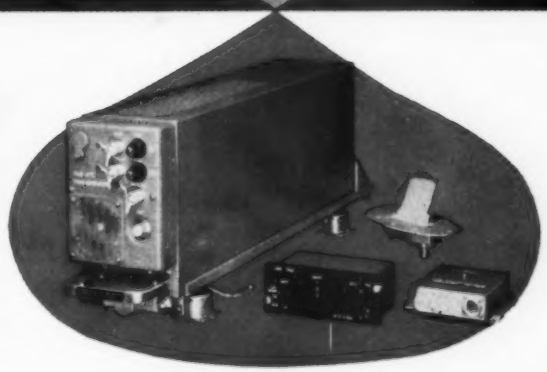

It is a highly reliable Interrogator-Transponder System that provides: positive identification of aircraft under all conditions of weather or traffic . . . facilities for air-to-ground transmission of coded traffic control information. Its compactness and low power requirements make it ideal for use aboard business or commercial aircraft, including the smaller business twins.

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- Cavity tuned transmitter increases frequency accuracy . . . provides maximum stability.
- Provides positive identification and positive information.
- Contains provisions for automatic altitude reporting.

The wilcox Model 758 Transponder Function Tester

- provides positive indication of a reply to ground interrogation when the panel-mounted indicator light glows.
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- weighs less than 1 pound complete!

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Installation of the 3500 eshp Napier "Eland 504" Jet-Prop engines with four-bladed propellers includes structural modification to engine nacelles, new instrumentation, and electronic and radio system modification in minimum down time.

Conversion of Convair 340s and 440s to Napier-powered Jet-Prop 540s is performed exclusively at AiResearch Aviation Service, the most experienced company in the modification of Convair 240s, 340s and 440s into executive aircraft and luxury airliners.

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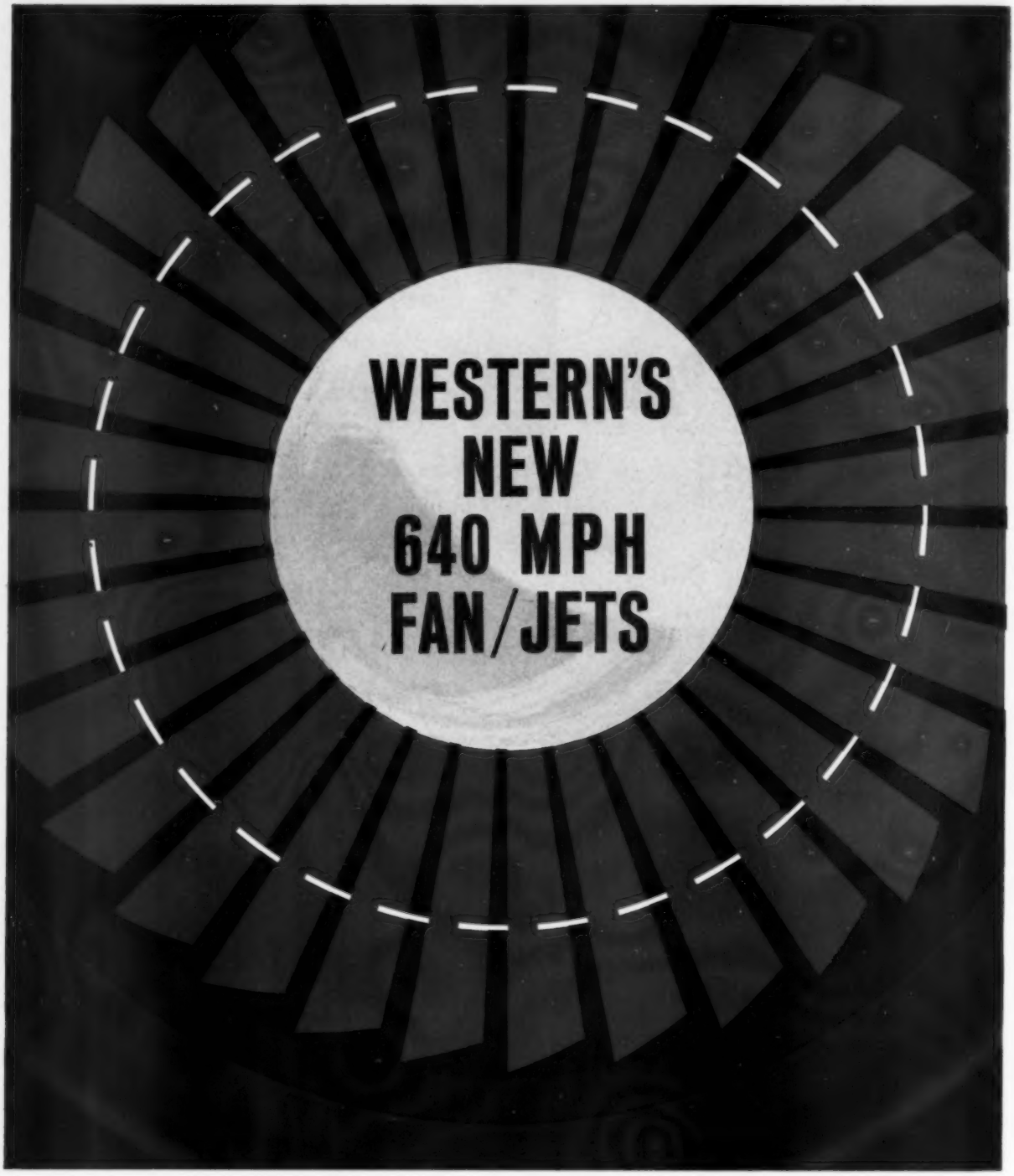

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WESTERN AIRLINES

World Outlook: Too Few Bright Spots!

IF THIS ANNUAL REVIEW of the airlift record for 1960 were devoted only to the negative and discouraging aspects, it would indeed be a gloomy report.

The U.S. carriers, especially, turned in a dismal financial performance incredibly low for an industry of such huge dollar volume. Strikes, accidents, unusually bad winter weather, increased costs and many other factors, provided gloom everywhere. And the bad news, or threats at any rate, continue to harass managements. At this writing there is pressure being applied for a federal jet fuel tax which would pile an additional $30 million a year burden on an industry which recorded a tiny profit of $1 million for 1960.

But the new jets are pulling traffic. An upsurge in business took place in late March. The industry will continue to grow. More people will fly. The big question is the usual one of keeping costs far enough below income to keep in the black. And there are monumental problems.

One encouraging sign is the leadership being shown by the new CAB Chairman, Alan S. Boyd. Here, for a change, is a man of decision, convictions, action, and imagination. There is probably more understanding of industry economic problems than there has been for some time—at least a desire to tackle problems instead of just talking.

Looking at the world industry, we have a very definite feeling that the European carriers, especially, should take another look at transatlantic and some other international fares. They are too high, but the American carriers have been unable to break the European bloc resisting decreases. Why should a first class passenger pay 14¢ a mile to fly the Atlantic, and only 7¢ a mile to cross the United States? A differential can be justified, no doubt—but not that much.

The IATA members will face a sharp increase in competition, by charters or by other means, unless the public is given a better break on the Atlantic. Similarly, we would expect to see more utilization of piston-engined equipment within the United States for low-fare spartan services.

Cargo rates must come down. Here again the European carriers have been the ones to resist change. They should be fully aware that the new CAB is determined to lower cargo rates both within and outside the U.S., just as it is likely to foster—and franchise—low-fare passenger services by one means or another to foreign points.

It may seem strange to be calling for lower fares and rates at a time when the industry is not making money. But the way to make money is to balance loads with costs. Low load factors at high fares and rates is no more the answer than high load factors with costs that are too high. There are profitable break-even points with piston equipment which would give the public a break. International air transport will never be maintained if it is just luxury service for the few.

Farewell to Capital

AND NOW there are eleven.

The number of domestic trunk airlines has been decreasing slowly but steadily from the original group awarded contracts after the infamous air mail reshuffle of the mid-thirties.

United Air Lines, with the absorption of Capital June 1, moves to the top position among the world airlines in terms of revenue passenger miles.

While no one likes to see an old established firm lose its identity and be swallowed up, there can scarcely be any challenge to the inevitability of the Capital disappearance. What has impressed us most is the tremendously fine public and industrial relations job performed by W. A. Patterson, United's president, and his organization.

There will be many transfers of personnel and of positions. Some will be happy, others won't be. But United has made the most of the situation in what appears to be a well-planned take-over.

The United-Capital merger will not be the last among the trunks. A few others are inevitable. But meantime, the network of local carriers (where mergers will also occur in due time) is growing steadily in the intermediate-to-local area. The total number of certificated U.S. carriers (52) has never been larger. Even as the original trunks decrease in number, air transport as a whole continues up in all other major respects.

JFK's New Frontiersmen

MR. KENNEDY's campaign expositions about "New Frontiers" have led to some rather strange and imaginative interpretations.

The Presidential commission studying the causes of the flight engineers' walkout decided to hold its executive sessions at Aspen, Colorado, a winter-summer resort in the Rockies accessible only by automobile and an air taxi service. Why? Well, it seems that Dr. Nathan Feinsinger, head of the commission, has a home there and his family was to be there in April.

So isn't it all so wonderful—industry people and union representatives trek to one of the most inaccessible places in the country for a meeting at Dr. Feinsinger's convenience. Was it really necessary to go so far just to find out about a disgraceful walkout which produced one of the costliest shutdowns in transportation history?

Wayne W. Parrish

PROGRESS REPORT ON THE WORLD'S MOST EXPERIENCED AIRLINE

Fokker F-7, Pan American's first plane

Martin M-130, the famed "China Clipper"

Douglas DC-3, noted for its reliability

Pan Am... 1½ billion miles later

Pan Am's first flight covered 90 miles between Key West, Florida, and Havana, Cuba. Now, more than a third of a century and some 1½ *billion* miles later, Pan Am serves 80 countries on all 6 continents. Pan Am Jet Clippers* fly to 84 cities 'round the world, including 16 U.S. Gateway cities. And only Pan Am directly links so many major cities on both sides of the Atlantic by Jet: 22 in Europe, 11 in the U.S.

Pan Am Clippers have crossed the Atlantic more than 85,000 times; the Pacific, more than 60,000 times; circumnavigated the world more than 5,500 times. Pan Am is the *one* airline that has flown more than 30 million passengers overseas.

The best way to sum up these statistics is to say that *Pan Am adds the Priceless Extra of Experience* to every flight.

Choose Pan Am and you enjoy the assurance that comes with flying the World's Most Experienced Airline. You relax, knowing that your Pan Am crew has been trained to exacting U.S. standards, that your plane has received expert care and maintenance. From your knowledge of Pan Am's experience comes wonderful peace of mind.

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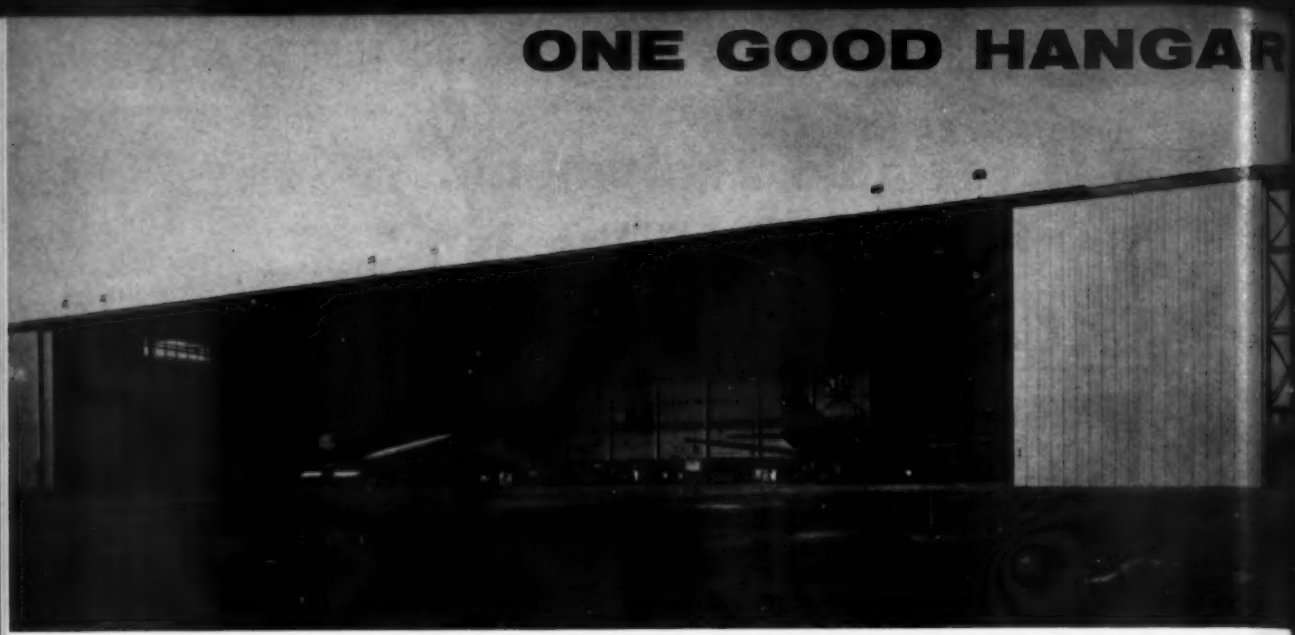

Delta Airlines Jet Turnaround base, Love Field, Dallas, Texas

DELTA AIRLINES chose ERWIN-NEWMAN hangars for efficiency and economy

Delta, one of the major U.S. airlines, when planning new hangars to meet the challenging efficiencies of their new jet overhaul bases—called on ERWIN-NEWMAN for the design and construction of the two hangars shown above. ERWIN-NEWMAN Suspended Cantilever design was the answer—"Every square foot of hangar—is a square foot of clear span, unobstructed work area." This modern day type construction provides for future modification in any direction, the clear span width can be easily extended, double cantilever span will increase depth, and tail gates (for vertical clearance) can be added at any location on the roof—to any height desired.

The hangar shown on the left was the first constructed for Delta, at Love Field, Dallas, Texas. This hangar proved its proficiency so completely that ERWIN-NEWMAN was awarded the job of building the larger hangar on the right at Municipal Airport, Atlanta, Georgia. This cantilever type hangar provides a clear depth of 170 feet, longest of its type ever undertaken. The smoothly operating hangar doors are as tall as a five story building. The 420 foot clear span width and the 71,400 sq. ft. of obstruction free hangar area house three DC-8's or 880's simultaneously with plenty of working area between each aircraft.

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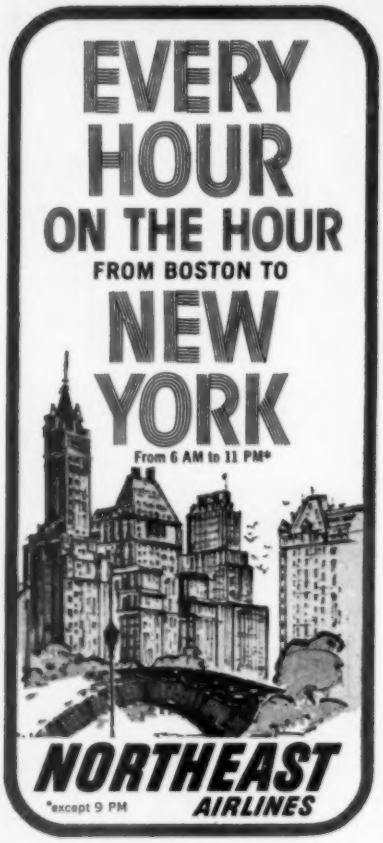

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LETTERS

'Joint' Airports

To the Editor:

There are a number of cities in the airline route patterns that could be more effectively served through a single or "joint" airport when the cities are located quite close together.

Permit me to quote from the "National Airports Plan—1959" as published by the FAA. First, a part of the foreword, or introduction:

"The purpose of any National Airport Plan is to specify in terms of *general location* and *type of development* the projects considered to be necessary to provide a *system* of public airports adequate to *anticipate and meet the needs of Civil Aviation.*"

And, under Section I, Airports: "The airports which comprise the national system, while interrelated, are classified into two types, namely; those for air commerce and those for general aviation.

Air Commerce airports are those which serve primarily the needs of scheduled air carriers. However, these airports also accommodate a large percentage of all other segments of Civil Aviation.

Airports for general aviation serve all types of civil aircraft other

Continued on page 112

G-E Paris Air Show Theme: Aviation/Space Progress

G-E CARAVELLE NOISE LEVELS ARE QUIETER BY SIGNIFICANT MARGIN

EDWARDS AFB, Calif.—Preliminary noise tests on the General Electric Caravelle have indicated its G-E CJ-805-23 aft-fan engines reduce interior speech interference levels (S.I.L.) by an average of about seven decibels.

Test results, which were based on measurements made by Douglas Aircraft Company, showed passenger compartment S.I.L. ranges are reduced as much as 11 db.

Speech interference level, considered the most important of interior noise measurements, is the average of the readings in the three octave frequency bands between 600 and 4800 cps. Conversation can be understood if the S.I.L. is equal to the level of speech.

In the Caravelle tests, 80 percent of the passenger compartment measurements fell below the normal voice levels of passengers sitting one foot apart. At raised voice levels not one voice level condition was above S.I.L. measured. All internal measurements were taken at the window seat position.

External noise measurements on the Caravelle show that it is by far the quietest jetliner flying. For example, at normal gross weights with full take-off power, noise levels on the ground under the flight path 8500 feet from start of take-off roll are less than 112 PNdbs.

G.E.'s aft-fan-equipped Caravelle is now in its fifth month of intensive flight test at Edwards AFB, Calif. Performance and test results to date have proven highly favorable.

See the CJ-805-23 at the Paris Air Show

T64 Grumman Gulfstream Program Announced

BETHPAGE, N. Y.—An active development program for installation of General Electric T64 turboprop engines on the Grumman Gulfstream has been announced by Grumman Aircraft Engineering Corporation.

The Gulfstream, now in service in the United States and throughout the world, is the first twin-turboprop aircraft in its size category designed specifically for corporate use.

In a similar development program, engine installation work on the T64-powered deHavilland Caribou is nearing completion. A nine-month flight test program is scheduled for early this summer.

Other installation studies of T64 turboshaft/turboprop configurations are underway by a number of airframe companies proposing the T64 for VTOL aircraft. General Electric's 2850 shp T64 engine offers a very attractive power-to-weight ratio. It has a low specific fuel consumption, which is maintained throughout the operating range of the engine.

A designed-in ability to operate continuously at attitudes from 100 degrees above the horizontal to 45 degrees below makes it highly adaptable to VTOL/STOL applications.

General Electric's T64 turboprop engine will be among those on display at the Paris Show

Latest Propulsion Hardware Will Be On Public Display

PARIS, France—General Electric's Paris Air Show exhibits will place on public display the wide spectrum of the Company's aerospace achievements.

The General Electric stand will also feature a large array of G-E aviation and missile hardware, ranging from the Discoverer capsule to constant speed drives and cockpit instruments.

The J79 engine, G.E.'s Mach 2 turbojet that has powered four U.S. aircraft (Lockheed F-104, Convair B-58, North American A3J, McDonnell F4H) to 18 world speed and altitude records, will be shown in an exploded-display fashion. Another exhibit will feature the 3850 lb thrust class J85, which currently powers Northrop's T-38 supersonic trainer and N-156F fighter.

A large rotating exhibit will display the basic J79/CJ-805 gas generator in conjunction with its major components. These include afterburner, commercial sound suppressor and thrust reverser, the G-E aft turbofan, and a power turbine and exhaust system that converts the engine to turboshaft power for marine and industrial use.

The CJ-805-23 turbojet, G.E.'s commercial aft-fan engine now powering the Convair 990 and the Sud Caravelle VII, will be shown in full-scale cutaway. Full-size models of the smaller CJ610 and its aft-fan equivalent—the CF700—will also be included.

Turboshaft engines on display will include the T58 and T64 powerplants. Both are under active consideration in Europe as turbocopter drives.

Other displays will include hydraulic constant speed drives, and an exhibit of the several approaches to VTOL/STOL lift currently under development at General Electric.

Flight Propulsion NEWS

Sleek, supersonic T-38s will school USAF pilots in the rigors of space-age flight

T-38 Supersonic Trainer Enters Service; Will School USAF Pilots by Year's End

RANDOLPH AFB, Tex.—A new era in supersonic flight training began in mid-March here with delivery of the Air Force's first operational T-38s.

For the two-place Northrop jet, this was the last step prior to entering full-fledged service as a "supersonic classroom" for space age pilots. The T-38 will provide new dimensions in safety and versatility to pilots training in the art of supersonic flight.

According to Air Training Command schedules, the aircraft will be used for instructor familiarization and check-out here until early fall. Then it will transfer to Webb AFB, Texas, and fully operational training status.

The T-38 "Talon"—powered by twin General Electric J85-5 turbojets—is the world's first supersonic aircraft designed expressly for training purposes. It combines performance capabilities of jet fighters twice its size with the highest safety assurance of any aircraft in its performance class.

The new trainer has Mach 1.2 speed capabilities, and a maximum rate-of-climb of 30,000 fpm. A single-place counterpart of the T-38, Northrop's N-156F "Freedom Fighter," has somewhat greater performance capabilities.

See the J85 engine at the Paris Air Show

2905 MPH HIT BX X-15; TOP MANNED SPEED MARK

EDWARDS AFB, Calif.—The X-15 rocket plane streaked to a new manned-flight speed mark of 2905 mph on March 7 here.

The experimental aircraft, whose mission will soon carry it to the fringes of space at speeds up to 4000 mph, made its run at 75,000 feet.

Power for the X-15's electrical and hydraulic systems was supplied by two General Electric auxiliary power units, unique turbodrives that operate independently of the aircraft's rocket engine. The hydrogen peroxide powered APU's assure aircraft control and pilot safety.

See General Electric's constant speed drives at the Paris Air Show.

Vertol Copter Selected as US Marine Transport

WASHINGTON, D. C.—A military version of the Boeing-Vertol 107 turbine-powered helicopter has been selected as assault-transport for the U.S. Marine Corps.

Like the 107-II, the military Vertol craft will be powered by two General Electric T58-8 gas turbine engines.

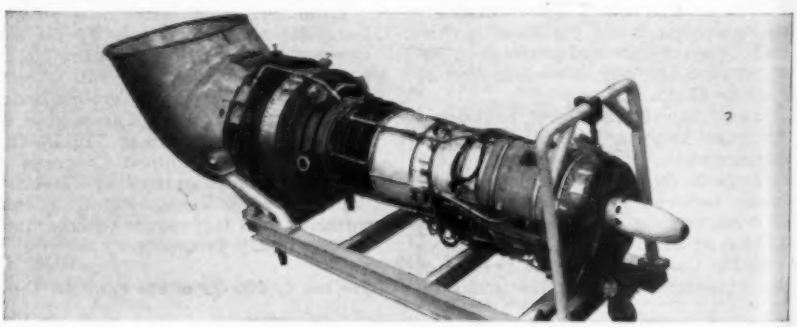
The Vertol 107 prototype design originated as a 1700 hp turbocopter. Two of these ships have been uprated to 2300 hp and are now undergoing FAA certification tests. The 25-passenger commercial 107-II will enter service this year with New York Airways.

Primary innovation in the Marine Corps version will be power-operated folding rotors, making the transport adaptable to the limited elevator and hanger dimensions of Naval assault ships. It will be fitted with 26 seats, and will handle pay loads over 5000 lb.

The G-E T58 engines, which will provide the turbocopter with 120 mph cruising speed and 145 mph top speed, have already proven their reliability in over 50,000 hours of operation.

G-E T58 engines also power the U.S. Navy's Sikorsky HSS-2 helicopter and its commercial version—the S-61, Kaman's HU2K, and the FAA certificated Sikorsky S-62.

See the T58 engine at the Paris Air Show



Model 240 Marine Turboshaft on Test

CINCINNATI, Ohio—General Electric's Model 240 turboshaft engine is now undergoing qualification test prior to application on the U.S. Maritime Administration's 80-ton, 60-knot hydrofoil craft scheduled for sea trials this summer. The engine is part of a marine power package offered by G.E. that includes powerplant, transmission, and docking engine.

A modified turboshaft version of General Electric's proven CJ-805 commercial turbojet, the basic Model 240 engine weighs 6600 pounds, only one-tenth as much as similarly rated reciprocating engines and steam propulsion systems. Its compact size makes it suitable for displacement ship propulsion, and use as a mobile electric power unit.

Besides size and weight advantages, the Model 240 is expected to offer sizeable benefits in maintenance simplicity. The G-E powerplant consists of a CJ-805 turbojet engine coupled aerodynamically to a newly designed power turbine that converts jet thrust to turboshaft horsepower.

High speed hydrofoil vessels are expected to play an important role in the future of marine transportation. Planned future versions will carry hundreds of passengers at 80-knot speeds.

See the Model 240 engine at the Paris Air Show

End of the 257th test mission: the F-104/J79 hits 500 hours without major overhaul

F-104 ACHIEVES 500 FLIGHT HOURS WITHOUT MAJOR ENGINE OVERHAUL

TINKER AFB, Okla.—The Lockheed F-104/J79 weapon system has shown that it can achieve 500 flight hours without a major engine overhaul.

Capability of the "Starfighter's" J79-GE-7 engine to reach the 500-hour mark was proven by a USAF accelerated service test mission terminated during March, 1961.

The program was conducted over a six-month period, and involved 257 typical Tactical Air Command missions. It was jointly managed by the U. S. Air Force's Oklahoma City Air Materiel Area Maintenance Division, and the General Electric Company.

In the U.S. Air Force and the Air National Guard, F-104/J79 effectiveness has been measured by daily use. Better than 98 percent of over 35,000 flights have been reported trouble-free.

The J79 engine of the Mach 2 fighter produces nearly 16,000 pounds of thrust, yet weighs less than 3600 pounds. It has powered the F-104 to eight world time-to-climb records, and the world altitude record of 103,395 feet.

See the J79 engine at the Paris Air Show

VTOL Flight by 1963 Slated for G-E Lift Fan

CINCINNATI, Ohio—First flight test of a lift-fan powered VTOL aircraft is planned for 1963 by G.E.'s Flight Propulsion Laboratory Department here.

The G-E timetable is based on a proposed flight research test series demonstrating capabilities of the company's J85-powered lift fan for aircraft of the future. Estimates are that a lift-fan powered jet aircraft will be airborne 21 months after start of the program.

Under the proposed G-E plans, an experimental aircraft will be equipped with two wing-mounted lift fans powered by J85 engines installed in the fuselage. Engine thrust will power the fans during takeoff and landing, and will be converted to jet thrust for horizontal flight.

An important VTOL safety factor will be incorporated by cross-ducting each engine's thrust so that equal amounts are delivered to each fan. With this arrangement, 61 percent of the aircraft's design lift can be retained in the event of an engine failure.

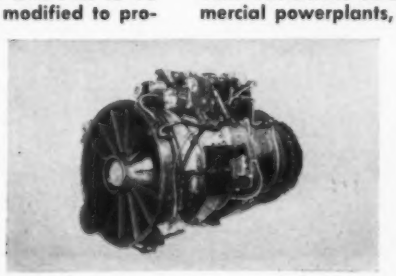
General Electric's proposed flight research program will culminate four years of basic lift-fan development and research. A J85-powered lift-fan engine has already completed over 100 hours of successful test-bed and wind tunnel operation.

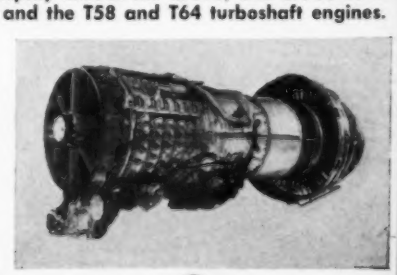
See the General Electric lift-fan display at the Paris Air Show

The lift fan look: one of several airframes considered by G.E. for VTOL testing

See These Engines—and Others—at the Paris Air Show . . .

On display at G.E.'s Paris Air Show exhibit will be: *Left*, the J79 16,000-lb-thrust-class powerplant that has powered the Air Force's F-104 and B-58, and the Navy's A3J and F4H to 18 world flight records; *Center*, the J85, recently modified to provide an unequalled 10-to-1 power ratio; and *Right*, the CJ-805-23 aft-fan turbojet, currently powering the Convair 990 and Caravelle VII. Others on display include the CJ610, and CF700 commercial powerplants, and the T58 and T64 turboshaft engines.





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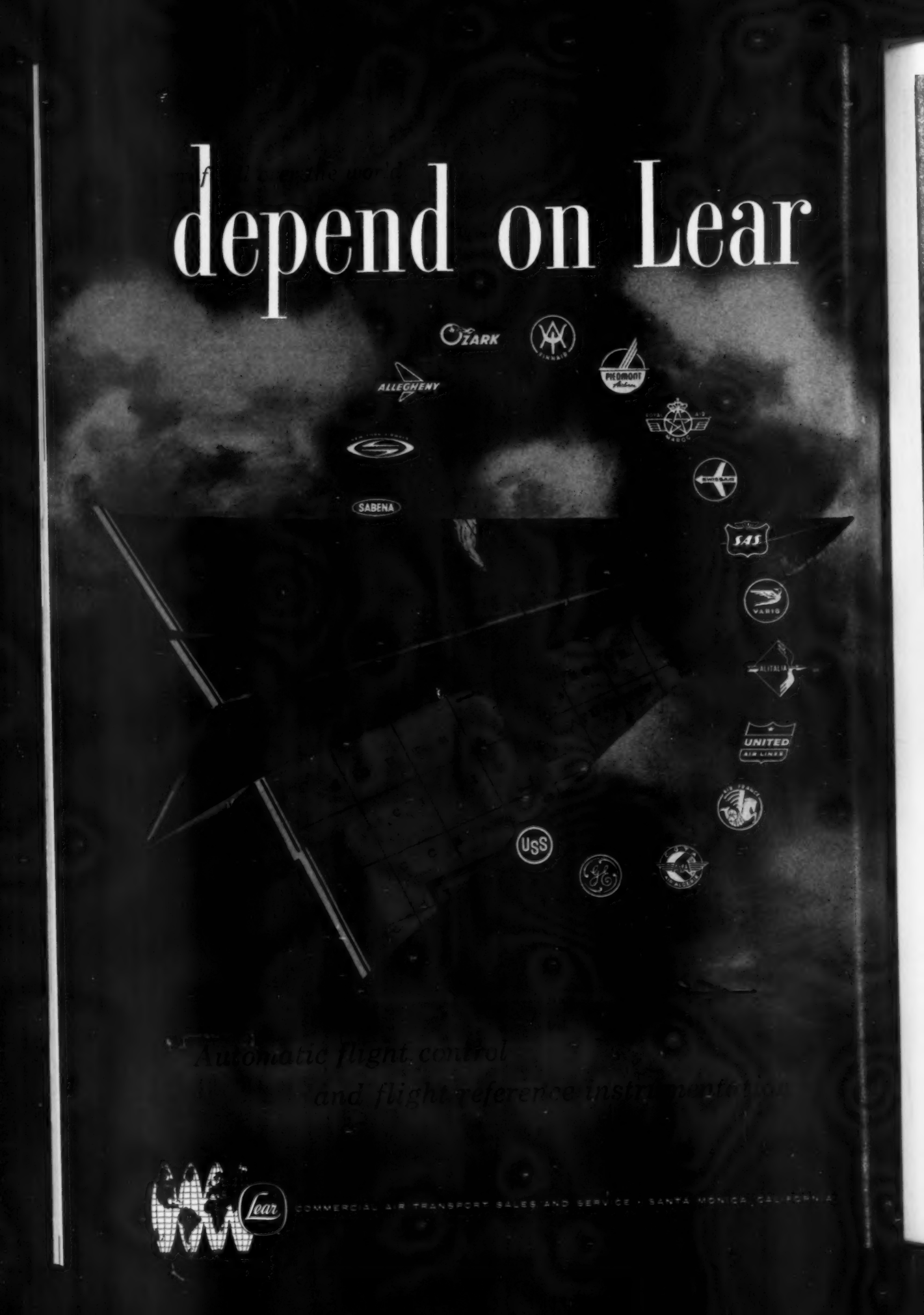

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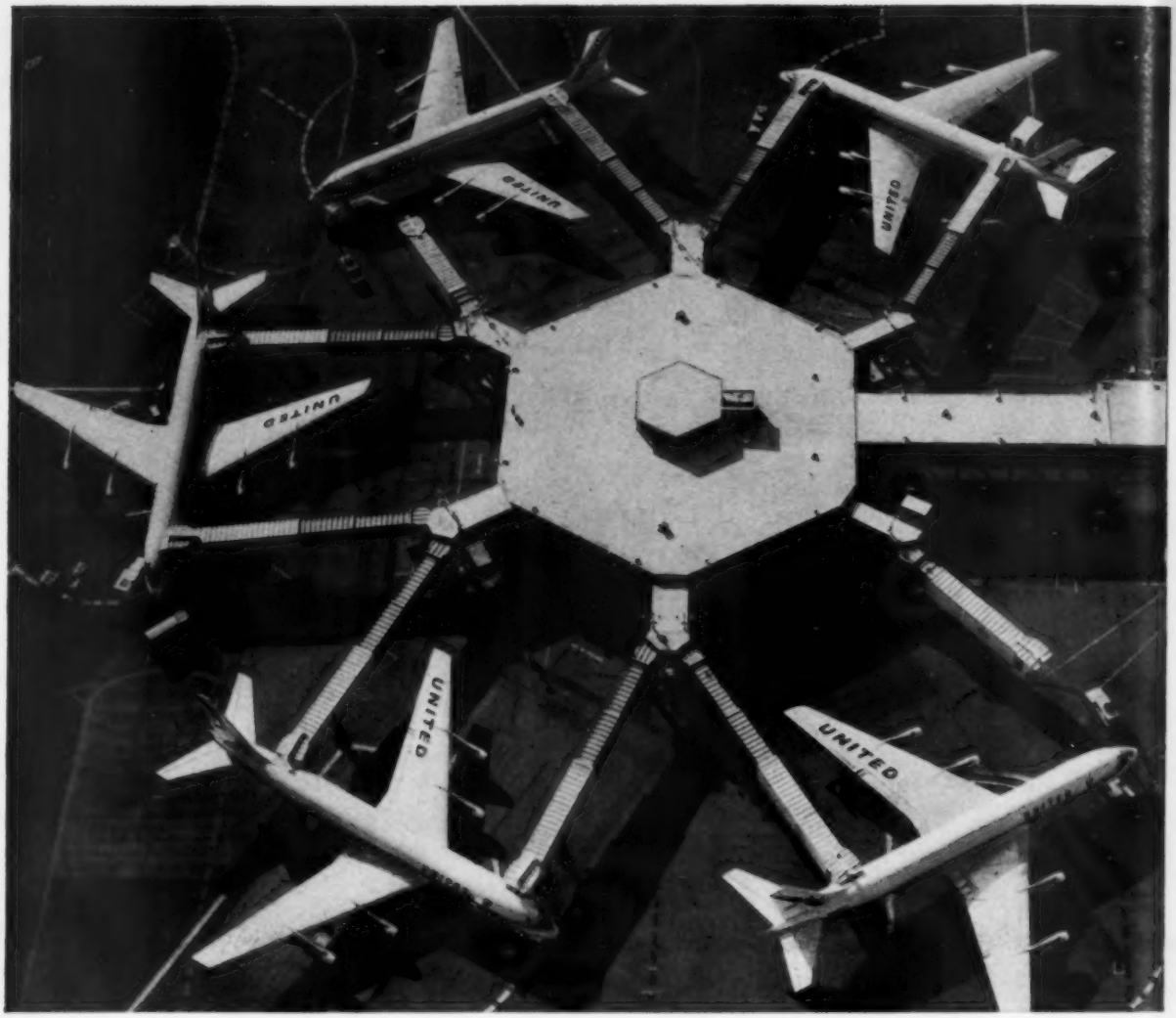

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AIR TRANSPORT TRENDS

Traffic

Transatlantic travel will top two million passengers this year. Airlines need less than 5% increase over 1960 in scheduled and charter passengers to reach this total. Not including charters, they require a 13.5% gain (increase last year was well above that at 28.8%).

More than 22% of world air travel is motivated by religion. TWA says this figure results from its recent survey. Most important factors: pilgrimages, church assemblies, organized church tours, missions.

Equipment

Big equipment order is expected from TWA. It probably will total $100 million to $150 million for long-range and intermediate-range jets. TWA dropped behind competitors in equipment, principally because of unsettled Howard Hughes situation and lack of a president. Now, with Hughes no longer in control and Charles C. Tillinghast Jr. on the job, the company can start to move.

One used piston transport 'not for sale' is DC-7C. Operators who own them are holding tight. The seven traded by SAS/Swissair to General Dynamics in deal for 990s were snapped up by Riddle before they went on the market. Douglas' cargo conversion for 39,000-lb. payload makes the "C" a real workhorse. But market is not nearly so rosy for shorter range DC-7s and 7Bs. Only one has been sold and that to FAA for a low $243,000.

Growth

New measures of air transportation's growth: 17 of the world's airlines each fly more than a billion passenger-miles a year; 22 carry more than a million passengers; 19 fly more than 100,000 hours; 18 have more than 50 aircraft in their fleet, and 22 employ more than 5,000 persons.

Communications

Revolution is stirring in airline communications. New AT&T Telpak volume-user rates are trimming costs from about $3 a mile for private line phone to one-fifth that amount, sometimes less. Impact is building up rapidly, with air carriers far ahead of other industries in availing themselves of substantial economies. In first month, for example, Eastern saved $30,000, yet had greatly expanded phone service.

Merger

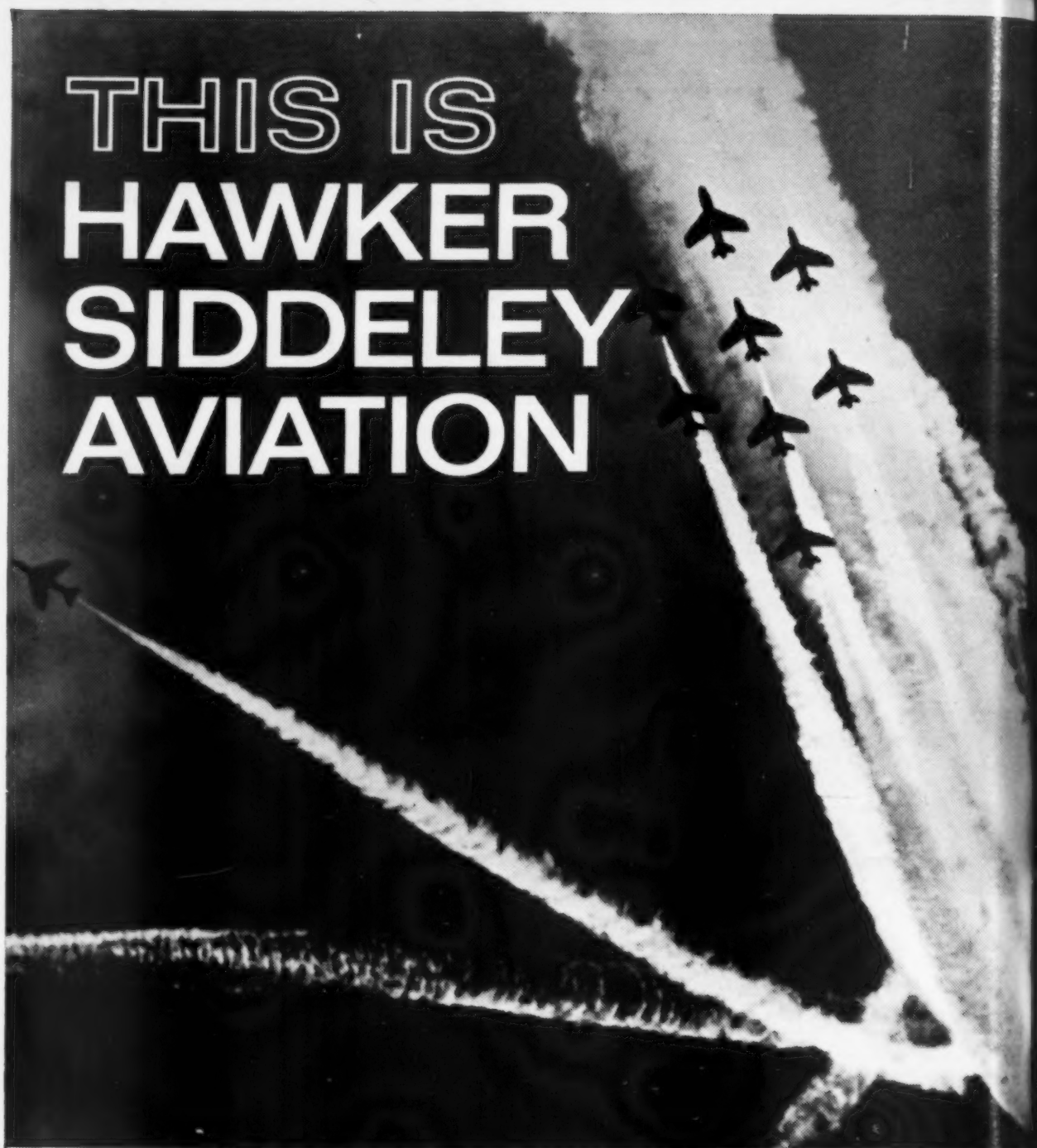
World's biggest airline is taking shape. On July 1, when United and Capital consolidate, the result will rewrite the record book for 1961. Assuming 1960 operational levels (they will probably be higher) United will carry 11.7 million passengers, operate 7.3 billion passenger-miles, fly 682,000 hours, own a fleet of 300 aircraft and employ 30,000 people.

Cargo

Open-rate warfare over Atlantic won't develop, despite all indications leading up to CAB's recent step to avoid one (see p. 33). Carriers just won't let it happen. Probable compromise will be a basic general commodity rate structure with a few specific commodity rates along lines now in effect in the Pacific.

New cargoplane competition is brewing. Douglas and Boeing haven't given up the fight for commercial customers, despite advantage gained by Lockheed via Air Force C-141 award. Douglas has already bounced back with proposal for combination cargo/passenger jet. Prototype will be flying by August of '62. A similar move is expected imminently from Boeing.

Airlines are not wanting for cargo plane specs. In canvassing carriers for requirements prior to C-141 go-ahead by the Air Force, FAA received 29 sets of specifications from 25 airlines.



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HAWKER

Famous for the immortal Hawker "Hurricane" of the Battle of Britain. Hawker Hunters now fly as spearhead of R.A.F.'s Fighter Command. Hawker's latest development is Britain's first vertical take-off strike fighter, now being tested.

AVRO

Has a long and proud history in civil and military aviation . . . from the famous "Lancaster" bomber of the last war, to today's "Vulcan" bomber and Blue Steel missile. The Avro 748 turbo-prop is the latest success in the civil aircraft field.

BLACKBURN

Blackburn has always played an important part in the development of naval aircraft. Its latest design the "Buccaneer" low level strike aircraft, will soon go into service with the Royal Navy.
The huge "Beverley" transport is already in squadron service with R.A.F. Transport Command.

A.W.A.

Armstrong Whitworth Aircraft developed and manufacture today's "Argosy" turbo-prop pressurised freighter aircraft. The military version is now in quantity production for R.A.F. Transport Command, and the "Seaslug" ship-to-air missile is in production for the Royal Navy.

DE HAVILLAND

Especially famous for the development of pure jet civil aircraft exemplified by the "Comet" which is now in regular airline service throughout the world. A second-generation jet airliner of advanced design, the "Trident", is scheduled to go into service with BEA.

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Producers of the revolutionary "Gnat" lightweight jet fighter, now in service with the Indian and Finnish Air Forces. The Company is now executing a substantial order for the two-seat transonic "Gnat" Trainer which is to become the standard advanced trainer of the R.A.F.

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INDUSTRY AT A GLANCE

INTERNATIONAL

Cargo agreement likely—With an assist from the CAB, North Atlantic IATA airlines will make their third attempt to agree on cargo rates. This time, chances of success are better.

Unable to agree last fall and in January, airlines faced an open rate situation on Apr. 10. One stumbling block was CAB's refusal to okay an IATA resolution that would prohibit U.S. freight forwarders from chartering aircraft. IATA removed the condition, and CAB approved—but some European carriers, particularly Lufthansa, objected strenuously and open rates seemed inevitable.

Now, to promote agreement, CAB says it will go along with a restriction against westbound chartering by forwarders. As a result, present rates will apply until July 1 and another meeting will be held.

CAB also agrees with the position of U.S. carriers (Pan Am, TWA and Seaboard) on rates—"reasonably spaced break points between the 1000 and 7500 or 10,000 kilogram levels" plus break points between 45 and 1000 kilograms. Specific commodity rates would be held to a minimum.

MANAGEMENT

Merger approved—A less-than-enthusiastic CAB has voted approval of the United-Capital merger, and the deal will probably be completed next month.

"In essence, the Board has decided to approve . . . because it has no practicable alternative," the decision said. "Notwithstanding the manifest implications of the merger in terms of maintaining a balanced route structure, we find that the public interest in preventing a collapse of the Capital system outweighs whatever disadvantages may inhere in the merger."

Restrictions were ordered to protect local airlines: Harrisburg-New York and Harrisburg-Pittsburgh services are prohibited. Philadelphia-Pittsburgh flights must start or end at Omaha or points west. There will be no single-plane Buffalo-Detroit service. Labor protective conditions must be met.

Member G. Joseph Minetti, in a concurring and dissenting opinion, said approval should have been conditioned on immediate investigation of whether Capital's route from the northeast to New Orleans and Miami should be altered or suspended. If the merger were canceled, CAB could prevent Capital's failure by suspending operations at unprofitable points and possibly paying subsidy until the carrier could reorganize, he added.

Chairman Alan Boyd, concurring, said CAB should have studied suspension or transfer of Capital's routes as soon as the merger application was filed. He approved the deal because bankruptcy was the only alternative, but warned UAL that it cannot "expect to maintain ad infinitum the monopoly markets created as a result of granting this application . . ."

And, in a significant statement, Boyd disagreed with Minetti on subsidy. He has "grave doubts," the chairman said, that CAB can subsidize any trunk where competing nonsubsidized service is available, where such service can be made available, or existing subsidized local service operations can be used.

FINANCIAL

Financial crisis—As 1960 ended, domestic trunks were well aware that they had not a good year. Preliminary estimate put 1960's industry profit at a slim $4 million.

But two weeks ago, with all final figures tabulated, the estimate turned out to be optimistic. The $4 million had shrunk to $1,188,000 net, equal to 2.9% return on investment. Compared with the average U.S. corporation's profit margin of five cents on every dollar of sales, the trunks had to generate $83 of sales to keep the same nickel.

Says ATA president Stuart Tipton: "When a major industry makes a profit as small as this, it is no longer a matter of a threat to expansion, or needed re-investment. It is a financial crisis."

EQUIPMENT

Cargoplane unveiled—The DC-8F Jet Trader, a combination passenger-cargo turbofan, will fly in August 1962 and will be available to airlines by the end of that year, Douglas Aircraft reveals.

The plane, says Douglas, will greatly expand the air freight market by permitting lower tariffs. On the Atlantic, it claims, the DC-8F can profitably carry cargo at 15¢ per ton-mile, half the current rate, in combination with passengers at fares 20% below economy class.

Up to 52,000 lbs. of cargo can be carried in the forward two-thirds, and 54 passengers in the aft section. Access to the cargo cabin will be through an 86 by 140 in. door, with provisions for mechanized loading of nine pallets. Maximum gross takeoff weight is 310,000 lbs. Power is four Pratt & Whitney JT3D-3 turbofans of 18,000 lbs. static thrust each. Cruising speed, 575 mph.; maximum range, 7,000 statute miles.

Wayne Parrish reports to the travel industry:

"ARGENTINA a delicious diet of vacation sales"

Most Americans think of Argentina as a land of beef on the hoof, and don't know that it is also the true paradise of beef on the plate. (At the risk of divulging my age, I must admit my own first impression of the Argentine derives from way back: Valentino in the role of a dashing gaucho.)

In quality, Argentine beef can match just about anything in Iowa or Chicago; and local chefs support their ranchero compatriots nicely with inspired cookery—beef and dishes to go with it. The result: a worthy cuisine for the sophisticated folk who have won the name "The Paris of the South" for Buenos Aires. (And for your customers.)

Lest you imagine my report will be a gastronomic lyric only, let me hasten

A sculptor's view of the great Capitol Dome in Buenos Aires — from the Plaza del Congresso.

to point out a few other things in the Argentine which are well worth singing about.

First, Buenos Aires with its beautiful, broad, scrupulously clean avenues. (Adjectives begin to pile up when one talks about Buenos Aires.) The buildings along those streets indicate Argentina's basically sound prosperity. While not as progressive architecturally as those in Brazil, they are indeed beautiful. Balconies, ornaments and sidewalk cafes all contribute to the happy, Parisian air.

On the Patagonian pampas — a gaucho and three friends move calmly under a majestic sky.

Climate is another of Argentina's blessings. It is near the tropics, but not quite tropical. An Argentine winter is about the equivalent of a winter in Arizona. Summers are dry and pleasing.

The people? In their vigor and ability, Argentinians are more like New Englanders than most Latins. American business travelers are usually pleasantly impressed by their competence and courtesy. Their pace is a little slower than ours—but who could blame them for that?

And, by the way, no visit to Buenos Aires would be complete without a few side trips. A day's trip across the estuary (of the Paraná and Uruguay rivers) to Montevideo is a must. Another day should be spent on the Mar de la Plata — Sea of Silver — beach. You'll find it is well named.

But the most opulent of all side trips leads right down the shopping streets of Buenos Aires. No lady tourist worth her salt could resist the magnificent values available — in fine leather work, beautifully wrought jewelry, furs and gowns that rival the best in Parisian ateliers. Remember, Argentine industries, in both luxury and industrial goods, often equal or surpass the highest European standards in quality.

All in all, Argentina is near perfection as a vacation destination. If you'd like to treat yourself to something out of the ordinary, you couldn't do better than go down and check the sales potential, yourself. After all, Buenos Aires is just an overnight flight from New York. You'll find it a fabulous hunting ground for travel sales ideas. (And you'll have the time of your life while you're at it.)

Braniff has been busy serving Argentina for nearly 15 years. Our South American representatives are old hands, by now. To be sure, their special knowledge includes familiarity with the most luxurious and speedy way to get to Argentina — Braniff's big-engined Boeing jets. They're the ones that give your clients more time to see Argentina, and more fun along the way.

(Incidentally, Argentines, who are connoisseurs of luxury, favor Braniff planes when they come to see what's up, up here in the United States.)

Write us and find out how we'll cooperate with you — both here and in South America — to give your tourist and business customers a service you'll be proud of. Write: Braniff Tour Department, Braniff International Airways, Exchange Park, Dallas 35, Texas.

Argentina is featured in the South American "El Dorado Host Tours" brochure, IT/M/41, and on page 82 in Braniff's 1961 El Dorado Holidays Tour Manual for Travel Agents.

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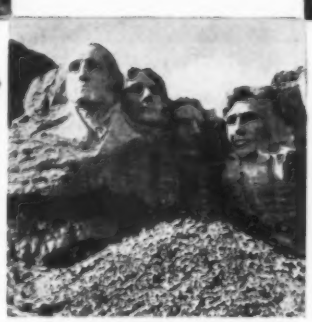
GRAND CANYON

. . . tour one of the wonders of the world. Exploring this giant chasm with its ever-changing scenery will remain one of the highlights of your travels for the rest of your life. (2 days.)

MT. RUSHMORE

. . . visit the quiet, relaxing atmosphere of South Dakota's renowned Black Hills. See the famous "faces on the mountainside"—you'll cherish every minute of this exciting trip. (1 day.)



MESA VERDE

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PHILLIPS 66

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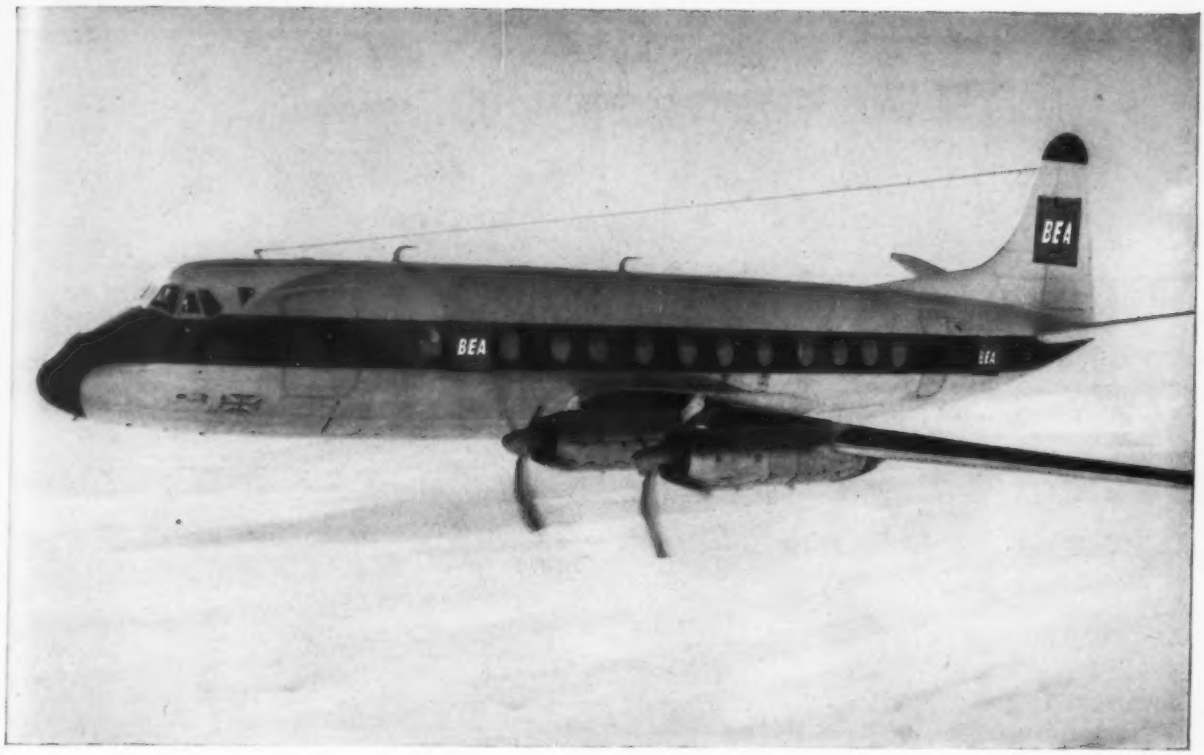
At any hour of the day or night, more passengers are being carried by BEA than by any other European airline. In fact, during 1960 BEA carried 26% of all European air traffic, and in doing so earned £14,500,000 in foreign currency – including £2,750,000 in dollars.

These facts are directly related to BEA's decision to be an all-British, all-jet airline – a decision which has enabled Vickers to develop the Viscount and Vanguard, has helped de Havilland to build the Comet 4B and the Trident and has encouraged Rolls-Royce to produce the internationally famous Dart, Tyne and Avon engines. In the last seven years, BEA has invested £69,000,000 in the British Aircraft Industry – with results that are summarised in the 3 following pages.

BRITISH EUROPEAN AIRWAYS

BEA AND THE VISCOUNT



DURING 1960

No. of Destinations served	68
No. of Passengers carried	3,107,620
Tons of Freight carried	24,241
Tons of Mail carried	6,299
No. of Flights	92,053
Aircraft miles flown	31,129,263
No. of Aircraft	64
Revenue earned £000's	30,800
Capacity ton miles offered	175,742,420
Load ton miles sold	118,907,609
Revenue per load ton mile	62d

EUROPE'S FOREMOST AIRLINE

BEA AND THE VANGUARD

The Vickers Vanguard, powered by four Rolls-Royce Tyne turbo-prop engines, is the newest and largest aircraft in BEA's fleet.

The Vanguard carries up to 139 passengers – all tourist class – or 114 first and tourist. In its special 'double-bubble' fuselage it can also carry up to 8 tons of cargo without taking up any of the passenger space. The Vanguard cruises at 425 mph at 15,000-25,000 ft. This operational flexibility, combined with great carrying capacity both of passengers and freight, gives the Vanguard outstanding economic advantages over all other short/medium haul airliners.

The Vanguard went into BEA service on the London-Paris route on March 1st 1961, and by July 1st 1961 will also be flying regular services to Edinburgh, Glasgow, Belfast, Naples, Rome, Palermo, Malta and Madrid.

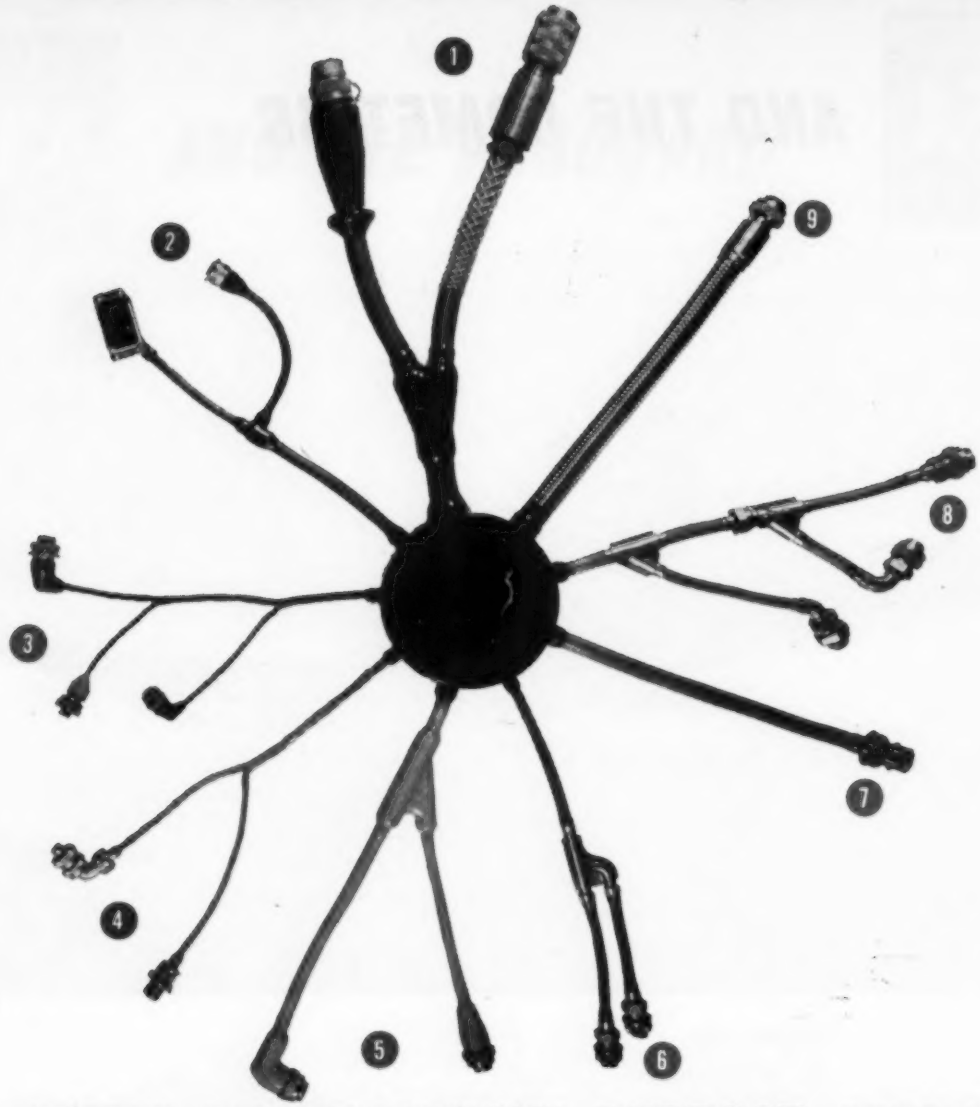
EUROPE'S FOREMOST AIRLINE

BEA AND THE COMET 4B

DURING 1960

No. of Destinations served	20
No. of Passengers carried	216,062
Tons of Freight carried	1,465
Tons of Mail carried	652
No. of Flights	5,055
Aircraft miles flown	3,201,487
No. of Aircraft	7
Revenue earned £000's	5,600
Capacity ton miles offered	31,373,210
Load ton miles sold	18,362,980
Revenue per load ton mile	73d

EUROPE'S FOREMOST AIRLINE



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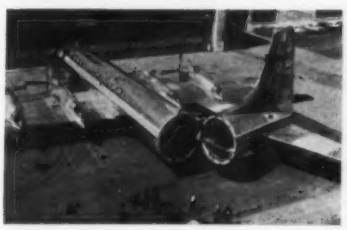
The World's Airlines 44



Air Cargo 52

The U.S. Trunks 56

The U.S. Locals 85

Helicopter Operations . . 107

Air Taxi 108

22nd Edition, Air Transport Assn.'s Facts & Figures . 119

Competition With Jets Hits New Peak In 1960

Personalized services assume a secondary role as avalanche of capacity in 707s and DC-8s becomes dominant in airline sales

By ANTHONY VANDYK

COMPETITION, healthy and unhealthy, is the dominant feature on the world air transport scene. With more than 200 jets now in service on international trunk routes, capacity has jumped at an alarming rate.

On the "blue ribbon" North Atlantic, for example, the number of seats increased 32.3% during 1960 and business responded favorably with a 28.8% increase. Among the top five carriers, TWA seating capacity was up 70.9%, KLM and Pan Am about 26%, and Air France and BOAC about 23%.

To fill this capacity, the world's airline salesmen are being put to the sternest test they have yet had to face. With fares fixed by IATA and with equipment almost identical on all carriers, the passenger is turning to schedule convenience for selection of the airline he will fly. Thus the big airlines are assuming an advantage over smaller flag carriers operating at lower flight frequencies.

With the avalanche of capacity, the word "service" is losing importance in attracting new business. Passengers no longer fly an indirect routing or delay their departure a day to travel on a small airline noted for its service. In the era of mass air transport and 135-seat aircraft, an airline is

PAN AM 707 at Frankfurt typifies jet domination on world routes. Pan Am Photo.

hard pressed to provide the personal touch that characterized its past piston operations. And there is a worldwide shortage of qualified people who can make such service possible.

The average international passenger doesn't seem to miss the pampering. He is pleased with arriving sooner and often paying less for the ride. Jet speeds make economy class accommodations increasingly more attractive to the business traveler, as evidenced by the 82% of all passengers flying economy on the North Atlantic in 1960.

The extension of economy-class service to almost all the trunk routes of the world is bringing substantial new business to the airlines. But the tremendous demand for charters shows that the IATA economy fares are still too high for the average traveler.

In Europe most vacation air travel is by inclusive tours which often provide the tourist with two weeks hotel accommodations as well as air transport for the same price as an ordinary roundtrip ticket. These inclusive tours are the bread and butter of most of the European non-scheduled airlines.

Excursion fares no bonanza

Last winter's North Atlantic excursion fare was only moderately successful. No figures are available to show how much regular-fare business was diverted as a result. Nonetheless, excursion fares and directional fares seem to be the only way that the industry can fill the tremendous capacities being offered on international routes today.

Here is an example of the philosophy behind the directional fare idea. Salary scales in European country "X" are half those in the United States. To encourage citizens of country "X" to visit the U.S. the fare should be half of that from the U.S. to Europe. To ensure that the directional fare is not abused, restrictions must be provided, such as selling it only in country "X" to nationals of that country.

As long as fares are too high for the average traveler there will be a brisk business in discounted tickets. This is one of IATA's biggest current problems. In many parts of the world—particularly, South America and the Middle East—shopping around may result in reductions of up to 30% below the official fare.

Certain Asian and South American carriers, both members and non-members of IATA, have attracted a large number of customers, particularly nationals of the countries in which they have their headquarters, simply because they are not "difficult" about discounts. As the majority of travelers have more time than money, they willingly ride a slower aircraft if it means saving a substantial sum of money.

Small airlines, big equipment

More and more of the world's smaller airlines are competitive, equipment-wise, with the major carriers. The flag airlines of such countries as Ireland, Israel, Iran and Pakistan operate Boeing jets. More and more small nations are building up international route networks. The major goal is New York. Before many months have elapsed it is likely that Idlewild will be served regularly by Ghana Airways, United Arab Airlines and Middle East Airlines.

With more and more airlines providing service to the various traffic centers of the world the competition to sell seats would be intense even if all airlines had equal rates. Restrictions on traffic rights and frequencies are very much the order of the day. Governments which are particularly restrictionist at present are West Germany and Italy.

SAS is the chief victim of the German policy. The Scandinavian carrier has had to accept a reduction of flight frequency through Germany and in certain cases to change its schedules when they were too near those of Lufthansa. A similar policy to protect its national carrier, Alitalia, has been adopted by the Italian government. Carriers of big as well as small nations have been affected.

Another way in which competition is stifled is pool agreements. Almost all intra-European flights are pooled. Pooling carriers claim that a pool provides better service to the traveling public. But experience in Europe has shown all too often that the passenger has to fly when the pool partners want him to.

Sometimes the passenger can beat the pool by taking the

Ranking The World's Airlines

(Excludes U.S.S.R. & Red China)

	More than a billion passenger-miles (000)		More than a million revenue passengers		More than 100,000 flying hours		More than 50 aircraft		More than 5,000 employes	
1.	American	6,404,999	1.	8,212,833	2.	473,990	3.	193	1.	23,826
2.	United	5,793,602	3.	7,738,698	3.	425,974	2.	204	2.	23,214
3.	TWA	5,659,767	4.	5,350,250	4.	390,331	4.	171	6.	20,335
4.	Pan Am	5,125,693	8.	3,186,146	5.	269,961	6.	148	3.	23,073
5.	Eastern	4,774,937	2.	8,141,374	1.	532,399	1.	233	8.	17,311
6.	BOAC	2,767,010		.....	13.	178,636	14.	69	5.	20,386
7.	Air France	2,515,865	10.	3,055,512	8.	241,017	5.	160	4.	22,852
8.	Trans-Canada	2,050,600	7.	3,440,303	6.	260,153	9.	91	11.	11,284
9.	Delta	1,878,534	9.	3,386,517	10.	197,024	10.	87	15.	7,651
10.	KLM	NA	12.	2,033,249	12.	188,729	7.	102	7.	18,600
11.	Northwest	1,675,654	17.	1,360,200	9.	203,700	17.	58	18.	7,050
12.	Capital	1,497,121	6.	3,588,638	7.	256,100	11.	82	17.	7,248
13.	BEA	1,352,167	5.	3,865,840	11.	191,968	8.	99	10.	12,915
14.	SAS	1,336,213	13.	1,880,276	15.	141,626	16.	61	9.	14,635
15.	Braniff	1,195,773	11.	2,298,359	14.	149,964	15.	62	22.	5,288
16.	Sabena	1,162,580		.....	16.	125,668	12.	71	14.	8,893
17.	National	1,073,910	15.	1,674,411	20.	100,897		...		.....
18.	Western	1,034,481	14.	1,721,619	19.	103,823		...		.....
	Northeast	.....	16.	1,439,438		.....		...		.....
	Continental	.....	18.	1,336,794		.....		...		.....
	Alitalia	.....	21.	1,099,668	18.	110,553		...	20.	5,838
	Indian Airlines	.....		.....	17.	119,102	13.	70	12.	9,511
	Swissair	.....	19.	1,303,225		.....		...	16.	7,332
	Trans-Australian	.....	22.	1,094,294		.....		...		.....
	Lufthansa	.....	20.	1,130,761		.....		...	13.	9,440
	Air India	.....		.....		.....		...	21.	5,417
	Varig	.....		.....		.....	18.	52	23.	5,061
	Qantas	.....		.....		.....		...	19.	6,932

Passenger statistics are "originating" passengers. Higher values shown for some carriers on p. 48 reflect enplaned passengers.

local sector of an intercontinental flight. But governments these days are becoming increasingly unhappy about permitting fifth freedom rights on short sectors of intercontinental flights.

BOAC, perhaps the biggest pooling advocate, now combines with TCA on services to Canada and also with various other British Commonwealth airlines. Air Union, once looked on as a potential consolidated airline, now seems to be taking the form of pools between the member carriers.

SAS and Swissair place considerable emphasis on pooling. Even in the communist block nations of Eastern Europe there are pool partnerships.

The big question mark on the world air transport scene continues to be Aeroflot. Despite its operational ability to fly to remote parts of the world, the Russian airline has not seen fit to start operations to Africa or Latin America, although Czechoslovakia's CSA has begun service to West Africa and flies as far east as Indonesia.

Next, a U.S.-Soviet bilateral

Indications are that the long delayed U.S.-Soviet bilateral may be signed this spring, thus enabling Aeroflot to serve New York and possibly other points in North America. However, since there is no evidence that Russia has any big jet transports in the 707 or DC-8 category and would have to rely on the turboprop Tu-114 for transatlantic service, it is doubtful that Aeroflot would gain much non-Soviet business from a U.S. operation.

The political situation with the Soviet Union is a key factor in planning for Japan Air Lines which would like to fly to and beyond Russia. This summer JAL is opening a polar route to Europe via Alaska. A much shorter route, however, would be over Russia.

Alitalia also has a big expansion program. It hopes to get the U.S. government's green light to fly to Los Angeles this year. It will include southeast Asia and Australia in its system in June, initially using aircraft chartered from TAI, the French independent.

The fastest expanding airline of all is Lufthansa which only got going in 1955. It now flies east to Tokyo and west to San Francisco. Before long it probably will connect these two points and become another round-the-world carrier. The German airline was the first—and only, at this writing—foreign airline to order the Boeing 727.

INTERNATIONAL TRAFFIC RESULTS
U.S. Trunk Airlines
1960 vs. 1959

Airline	Revenue Passengers (000) 1960	1959	% Change	Revenue Passenger Miles (000) 1960	1959	% Change
American	111	115	—3.5	114,303	117,645	—2.9
Braniff	65	49	13.3	129,418	91,131	42.0
Caribair	387	335	15.5	27,210	23,292	16.8
Delta	28	48	—41.7	38,306	60,023	—36.2
Eastern, Overseas	492	417	18.0	722,369	610,470	18.3
San Juan	399	324	23.1	612,763	500,429	22.4
Bermuda	44	43	2.3	34,294	33,737	1.6
Mexico	49	50	—2.0	75,312	76,304	—1.3
National	33	78	—57.7	26,439	55,196	—52.1
Northwest	185	185	...	324,610	356,790	—9.0
Panagra	125	131	—4.6	198,327	187,653	5.7
Pan American	3,187	2,963	7.6	5,125,693	4,593,658	11.6
Latin America	1,183	1,316	—10.1	1,419,449	1,478,651	—4.0
Atlantic	1,496	1,262	18.5	2,068,692	1,779,389	16.3
Pacific	441	334	32.0	1,566,319	1,282,911	22.1
Alaska	68	51	33.3	71,233	52,707	35.1
Trans Caribbean	140	94	...	216,058	180,782	...
TWA	383	347	10.4	1,172,799	1,066,259	10.0
United	163	114	43.0	404,752	282,913	43.1
Western	53	53	..	83,020	82,910	0.1
Total	5,212	4,835	7.8	8,367,246	7,527,960	11.2

All Boeings and Caravelles

Events in the Congo have not affected Sabena as much as was first thought. It remains to be seen whether the Congo and the other new nations of Africa will allow their airlines to be run by the carriers of their former colonial masters. None of these nations can go it alone. All must have foreign personnel in key positions.

Ghana Airways has gone through the motions of becoming independent and has embarked on a buying spree of aircraft ranging from the Ilyushin Il-18 through the Boeing 707 to the VC-10. Yet Ghana Airways would quickly disintegrate if all its BOAC "advisers" were withdrawn.

For transport aircraft salesmen these new African nations look full of promise. But close examination invariably proves that an aircraft sale requires financing and provision of full maintenance support.

The world market for new aircraft is sluggish. Orders for such new types as the de Havilland Trident and the BAC-107 are slow in coming. In fact, the only jets being ordered or reordered are the Boeing series and the Caravelle.

The F-27 has had limited success as a DC-3 replacement while there have been almost no orders for the Avro 748 and the Handley Page Herald. It seems that most airlines have decided to use larger piston engine aircraft or Viscounts when the veteran Douglas transport needs replacing.

One reason is that the used aircraft market is quiet. Prices are low. Hence, most carriers prefer to make use of propeller aircraft displaced by jets rather than sell them at give-away prices. This is one of the reasons why so many airlines have converted their DC-7s and Super Constellations into freighters.

Competition is the main factor forcing purchase of new aircraft. Many airlines would like to declare a moratorium on purchases for several years. But when one airline buys a new type its competitors must match or better it. The Viscount started the turboprop vogue, the 707 and the DC-8 launched a big jet buying spree while the Caravelle started a rush toward the medium jet.

Now the aircraft salesmen are trying to start a new wave of buying in two areas—the small 50,000 pound "Viscount/-Convair replacement" jet and the supersonic transport. Because the airline business is so highly competitive, both types are likely to be bought in quantity. ■

Top Jet Operations—1960

Airline	Rev. Pass. Miles (000)	No. of Passengers	Load Factor	Type
1. American	3,173,151	1,893,000	71.6	707
2. TWA	2,967,788	1,447,658	66.9	707
3. Pan Am	2,906,521	.....	.....	707
4. United	2,529,430	1,751,019	73.1	DC-8
5. BOAC	1,046,364	270,264	66.6	Comet 4
6. Air France	605,445	159,419	63	707
7. Eastern	534,276	460,679	67.5	DC-8
8. Continental	515,732	456,000	52	707
9. Sabena	508,268	125,459	62	707
10. Pan Am	490,164	.....	58.1	DC-8

Note: Data not available on KLM or Qantas.

Top Turboprop Operations—1960

Airline	Rev. Pass. Miles (000)	No. of Passengers	Load Factor	Type
1. BOAC	1,275,734	413,786	....	Britannia
2. Capital	1,111,639	.....	56.2	Viscount
3. BEA	1,095,385	3,107,620	68.2	Viscount
4. Eastern	1,009,706	1,875,413	51.8	Electra
5. TCA	933,052	.....	68	Viscount
6. American	833,372	1,599,341	58.6	Electra
7. Northwest	357,348	.....	58.3	Electra
8. National	306,679	429,679	50.2	Electra
9. Trans-Australia	268,712	.....	67.4	Viscount
10. Continental	238,122	611,000	47.5	Viscount

How The Turbines Fared in 1960

Airline	No. of Aircraft Turboprop	Jet	% of Fleet	Rev. pass. carried	% of total	Rev. pass. miles (000)	% of Total	Load factor Turbine	Load factor Overall	Turbine rev. hours flown	% of total
Aer Lingus	7 (V)		37	349,759	54.5	109,323	67.4	69	69	13,893	49.4
	7 (F7)		37	238,525	37.1	43,771	27	71	69	9,835	35.0
Air Algerie		3 (CA)	13.6	118,719	33.4	....	...	...	...	5,084	13.2
Air France		17 (B7)	10.6	159,419	5.2	605,445	24.1	63	63	16,143	6.7
		24 (CA)	15	761,308	25.4	459,649	18.3	65	63	27,535	11.4
Air India		3 (B7)	25	44,153	38.6	163,387	49.2	54	51.9	5,333	19.7
Alitalia	14 (V)		31	.....	...	119,908	14.4	59.8	57.7	18,890	17.1
		4 (D8)	8.9	.....	...	179,668	21.6	61.5	57.7	4,812	4.3
		4 (Ca)	8.9	.....	...	73,793	8.9	52	57.7	4,837	4.4
Allegheny	4 (C5)		11.8	57,251	8.1	15,243	11.5	44.6	42.5	2,996	5.7
Aloha	6 (F7)		60	321,449	80	45,934	84.5	61.6	59.8	9,310	68.5
American	33 (LE)		17.1	1,599,341	18.6	833,372	13	58.6	65.1	71,872	15.2
		34 (B7)	17.6	1,893,000	22	3,173,151	49.5	71.6	65.1	81,236	17.2
BEA	70 (V)		71	3,107,620	80.5	1,095,385	81	68.2	67.5	139,279	72.5
		7 (C4)	7.1	216,062	5.6	167,837	12.4	62.7	67.5	9,170	4.8
BOAC	15 (BRI)		21.8	160,928	18.1	518,093	18.7	59.1	60.6	39,832	22.4
	17 (BR3)		24.7	252,858	28.6	657,641	23.7	55.5	60.6	47,954	26.9
		19 (C4)	27.5	270,264	30.6	1,046,364	37.8	66.6	60.6	62,367	35
		6 (B7)	8.7	85,109	9.7	275,806	9.9	57.1	60.6	8,504	4.8
Bonanza	8 (F7)		100	260,449	99.5	56,223	84	41.07	40.1	17,094	71
Braniff	8 (LE)		12.8	....	...	164,491	13.8	52.14	52	14,909	10
		4 (B7)	6.4	....	...	275,606	23	66.9	52	8,307	5.5
Capital	51 (V)		82	....	...	1,111,639	74.3	56.2	53	181,763	71
Cathay Pac.	2 (LE)		33	57,559	63.4	75,012	70	54	50	6,053	46.2
Cen. African											
Continental	13 (V)		40.5	611,000	45.8	238,122	26.8	47.5	50.3	36,605	42.6
		5 (B7)	17.1	456,000	34.2	515,732	58.2	52	50.3	18,274	21.2
Cubana	9 (V-BR)		64	....	...	105,390	78	47.1	45.7	12,660	60
Czechoslovak			8	....	...	80,464	12.8	57.8	66.8	2,001	4.5
			8	....	...	165,124	26.4	56.2	66.8	3,665	8.0
Delta		9 (C8)	10.7	174,244	5.1	151,766	15.2	61.01	58.8	6,558	3.3
		6 (D8)	6.9	514,506	15.2	460,957	24.7	70.54	58.8	12,886	10.7
Eastern	39 (LE)		16.7	1,875,413	20.9	1,009,706	21.2	51.86	53.9	99,334	18.6
		11 (D8)	4.7	460,679	5.1	534,276	11.2	67.48	53.9	14,625	27.5
El Al											
Indian Airlines	10 (V)		14.3	271,798	35.3	194,728	52	74.5	68.9	24,869	20.8
Middle East											
Japan		4 (D8)	17.4	23,363	3.6	....	...	...	66.7	3,093	5.2
Lufthansa		4 (B7)	12.0	86,150	7.6	345,000	39.9	68.5	61.4	8,117	8.3
National	12 (LE)		26.6	429,210	25.6	306,679	28.6	50.22	53.8	28,139	28
		3 (D8)	6.7	274,493	16.4	287,902	26.8	76.9	53.8	6,346	6.0
Northeast	10 (V)		32	614,671	42.6	161,043	28.5	63.8	51.6	25,588	29.2
		4 (C8)	12.9	73,927	5.1	78,894	13.8	65.3	51.6	1,993	22.8
Northwest		5 (D8)	8.7	.....	...	51,290	3.2	60.14	53.8	1,434	0.8
	9 (LE)		15.4	.....	...	357,348	21.5	58.3	53.8	25,418	13.5
Ozark	3 (F7)		11.1	125,936	22	22,627	22.6	43.93	40.39	6,584	10.8
Pacific	6 (F7)		25.4	199,230	40	47,656	41.5	52.1	50.5	12,578	33.6
Pakistan	3 (V)		23	106,949	41.2	51,484	24	64.56	60.34	6,774	26.2
		1 (B7)	7.7	11,425	4.4	33,734	15.7	48.06	60.34	1,350	5.2
Panagra		3 (D8)	27.3	....	...	47,423	23.9	50	57.4	1,717	9.8
Pan American		23 (B7-3)	18.8	.....	...	2,458,448	50.7	65.9	63.9	63,843	23.7
		6 (B7-1)	2.2	.....	...	448,073	9.3	71.6	63.9	11,048	4.1
		17 (D8)	11.5	.....	...	490,164	10.1	58.1	63.9	15,106	5.6
Piedmont	8 (F7)		32	266,066	52	54,863	56.5	46.12	45.32	17,319	38.6
Qantas											
Sabena		5 (B7)	7	125,459	14.4	508,268	43.7	62	62.1	13,266	10.6
SAS		(D8 & CA)	29.5	449,912	23.9	572,583	41.9	59	56.4	27,326	19.6
So. African	7 (V)		24	254,588	69.5	128,978	42.5	63.4	58.9	13,569	36.8
		3 (B7)	10.6	12,476	3.4	50,844	16.8	52.4	58.9	1,327	3.6
Swissair		7 (D8)	19.5	226,121	17.3	223,278	31.2	62.1	58.2	8,784	10.8
TAA	3 (LE)		6.4	....	...	163,112	30.2	67.4	64.9	....	...
	12 (V)		25.6	....	...	268,712	49.8	67.4	64.9	....	...
TAI		1 (D8)	9	6,411	7.4	28,865	11.5	49.6	59.86	997	3.4
TCA	49 (V)		53.8	....	...	933,052	45.5	68	66	142,896	55
		7 (D8)	7.7	....	...	308,936	15.1	77	66	6,992	2.7
TSAL	3 (LE)		43	82,072	85.4	112,095	85.4	73	72.5	6,787	93.5
TWA		28 (B7)	16.4	1,447,658	24.8	2,967,788	52.5	66.9	63.4	76,996	19.6
UAT		2 (D8)	10	18,386	8.2	....	...	66	68.1	1,509	3.4
United		31 (D8)	15.2	1,751,019	21.6	2,529,430	43.7	73.1	65.2	65,740	15.4
		13 (B7)	6.4	419,341	5.1	296,730	5.1	75.8	65.2	8,540	2.0
Varig		(2 B7, 2 CA)	7.7	83,797	15.8	187,480	29.7	69	59	5,325	6.9
Wien Alaska	2 (F7)		7.4	15,096	33.9	6,762	52	54.9	48.6	2,038	11.7
Western	6 (LE)		15.4	269,807	15.6	204,409	19.8	60.1	58.2	16,234	15.7
		2 (B7)	5.1	126,099	7.3	126,099	9.5	70.0	58.2	2,968	2.9
TOTALS	446	329		21,817,075		29,583,055				1,676,226	

Aircraft Designations: B7—Boeing 707/720, BR—Britannia, CA—Caravelle, C4—Comet, C5—Convair 540, C8—Convair 880, D8—Douglas DC-8, F7—Fairchild F-27/Fokker Friendship, LE—Lockheed Electra, V—Viscount. Source: AIRLIFT research.

1960 World Airline Statistics

Seventy-five of the world's airlines during 1960 carried 88 million passengers some 59.5 billion passenger-miles, according to an exclusive AIRLIFT survey. Operating 3,164 aircraft, they flew 6.5 million hours and employed 364,000 persons. Here are the results by airline:

	Revenue Passengers	Revenue Pass. Miles (000)	Load Factor	Revenue Hours	No. of Aircraft	No. of Employes	Rev. Pass. Per Employe	Rev. Pass. Miles Per Employe	Employes Per Aircraft
Aer Lingus	642,122	162,151	69	28,024	19	2,200	292	73,705	116
Aerlinte	29,100	88,750	61	5,676	3	268	109	331,156	89
Air Algerie	595,656	312,200	66	38,303	21	1,450	410	215,310	69
Air France	3,055,512	2,515,865	63	241,817	160	22,852	134	110,094	143
Air India	114,162	332,321	51.9	26,938	12	5,417	21	61,348	451
Alaska Airlines	127,027	108,898	41	18,708	8	437	291	249,194	55
Alaska Coastal	59,092	5,947	56.1	9,580	15	150	393	39,626	10
Alitalia	1,099,668	831,923	57.7	110,563	45	5,838	188	142,500	130
Allegheny	685,986	131,657	42.54	52,401	34	1,172	581	112,335	34
Aloha	400,065	54,319	59.8	13,607	10	406	985	133,790	41
American	8,613,903	6,404,999	65.1	473,990	193	23,826	362	268,824	123
Bonanza	261,876	65,155	48.1	24,159	8	495	529	131,626	62
Braniff	2,298,359	1,195,773	52.03	149,964	62	5,288	435	226,130	85
BEA	3,845,840	1,352,167	67.5	191,968	99	12,915	299	104,697	130
BOAC	983,849	2,767,010	60.6	178,636	69	20,386	43	135,731	295
Cathay Pac.	90,796	107,630	50	13,033	6	366	248	294,071	61
Capitol	3,588,638	1,497,121	53	256,160	82	7,248	495	206,556	88
CPAL	342,392	541,722	....	....	28	2,660	128	203,680	95
Con African	191,741	92,899	65	21,149	16	1,192	161	77,935	75
Central	170,616	33,264	39.2	27,565	15	514	332	64,716	34
Continental	1,337,000	891,239	50.3	85,904	32	2,838	471	314,038	89
Cordova	11,413	1,962	37.1	3,015	10	53	215	37,018	5
Cubana	243,250	135,030	45.76	21,072	14	1,080	225	125,028	77
Czechoslovak	753,840	627,111	66.8	44,967	50	2,176	346	288,194	44
Delta	3,374,657	1,870,387	58.86	197,024	87	7,651	441	213,761	88
Eagle	41,194	22,395	56	3,147	11	620	74	36,102	56
Eastern	8,993,296	4,774,937	53.9	532,399	233	17,311	520	275,833	74
Ellis	61,948	3,703	53.0	7,266	9	118	525	31,381	13
Ethiopian	104,067	65,338	39.6	17,677	12	895	116	73,003	74
Frontier	338,189	90,028	38.8	60,014	30	1,095	309	82,217	36
Garuda	381,129	....	....	38,486	38	4,292	89	....	113
Guest Aerovias	....	....	....	....	....	....	....	....	....
Hawaiian	518,999	115,533	63.3	....	16	730	710	158,250	46
Iberia	953,447	696,325	59.0	72,913	37	3,750	254	185,686	101
Indian Airlines	769,244	357,957	68.9	119,102	70	9,511	81	37,636	136
Japan	761,857	542,675	66.7	58,609	23	4,100	186	132,360	178
KLM	1,360,000	....	59.7	203,700	102	18,600	73	....	182
Lake Central	231,572	35,974	38.5	26,584	12	602	385	59,757	50
LAA	39,148	1,355	56.7	9,015	5	133	294	101,879	26
Lufthansa	1,130,761	865,500	61.4	97,000	33	9,448	120	91,684	286
Mackey	128,176	26,699	47.5	4,883	6	121	1,059	220,652	20
Middle East	....	....	....	....	....	....	....	....	....
Mohawk	590,162	119,409	45.5	39,428	22	1,012	583	118,000	46
NYA	146,775	3,017	53.4	8,603	6	233	630	129,484	39
National	1,673,413	1,073,910	53.80	100,897	45	3,871	432	277,424	86
NZNAC	644,905	169,212	73.94	52,389	29	1,808	357	93,500	62
No Central	1,035,076	171,732	43.56	98,785	40	2,152	481	79,801	54
Northeast	1,439,438	546,370	51.6	87,298	31	2,764	518	204,910	89
Northwest	2,139,547	1,653 966	53.82	188,729	58	7,050	303	234,000	121
Ozark	572,348	100,061	40.39	61,031	27	1,949	546	95,387	39
Pacific	499,395	114,810	50.5	37,476	23	772	647	148,718	34
Pac Northern	134,567	116,304	48.3	19,937	9	615	219	189,112	68
Pakistan Intl.	259,621	214,009	60.34	25,966	13	4,705	55	45,485	362
Panagra	124,594	198,327	57.4	17,531	11	1,304	95	152,000	119
Pan American	3,381,151	4,832,647	63.9	269,961	148	23,073	146	209,000	153
Piedmont	500,544	97,048	46.32	44,879	25	1,209	486	94,313	41
Riddle	1,251	4,899	96.1	37,047	42	650	....	....	14
Sabena	872,955	1,162,580	62.1	125,668	71	8,993	98	130,730	125
SAS	1,880,276	1,336,213	56.4	141,626	61	14,635	128	91,303	240
S&W	27,393	....	72.9	26,028	12	910	....	....	76
Slick	28,473	114,252	100.0	24,158	5	176	....	....	35
So African	366,438	303,834	58.9	36,966	29	2,844	129	106,833	98
Southern	260,760	46,765	31.7	39,107	26	937	279	49,900	36
Swissair	1,303,225	715,784	58.2	80,546	36	7,332	178	97,625	204
Trans Tex	306,885	72,035	38.7	51,482	26	776	395	92,829	30
TAA	1,094,294	540,076	64.9	91,169	47	4,168	263	129,576	89
TAI	86,550	250,759	59.86	29,149	11	1,644	53	152,530	149
TCA	3,440,303	2,050,600	66	260,153	91	11,284	305	181,726	124
Trans Carib.	139,865	216,058	80.8	12,442	6	268	522	806,186	45
TEAL	96,599	131,167	72.56	8,786	7	900	107	145,740	129
TWA	5,817,549	5,659,767	63.4	390,331	171	20,335	286	278,326	119
UAT	224,131	314,995	48.1	44,535	20	3,120	72	100,960	156
United	1,138,047	5,793,602	65.2	425,974	204	23,214	350	250,000	114
Varig	764,030	392,119	59	77,028	52	5,061	150	77,478	97
West Coast	389 000	93,188	44.6	....	20	780	500	119,200	39
Western	1,721,619	1,034,481	58.2	103,823	39	2,730	630	378,930	70
Wien Alaska	44,385	12,918	48.6	17,079	27	201	221	64,269	7
TOTAL	88,885,943	59,513,078		6,580,147	3,164	364,581			

Transport Deliveries, U.S. Manufacturers

DOUGLAS DC-8

Airline	Total on order	Delivered as of April 30, 1961	Scheduled for delivery between May 1 and Dec. 31, 1961
Aeronaves (Model 50)	1	....	Not Available
Alitalia .... (Model 40)	10	5	
Canadian Pacific (Model 40)	4	2	
Delta (Model 10)	6	6	
*Eastern (Model 20)	*15 + 1	11	
Iberia (Model 50)	3	....	
Japan (Model 30)	5	4	
KLM (Model 30-7) (Model 50-6)	13	10	
National (Model 20)	3	3	
Northwest (Model 30)	5	5	
PAA (Model 30)	19	18	
Panagra (Model 30)	4	4	
Panair do Brazil (Model 30)	2	2	
Philippine (Model 50)	2	....	
SAS (Model 30)	7	7	
Swissair (Model 30)	3	3	
TCA (Model 40)	11	10	
TAI (Model 30)	3	2	
United (Model 10-22) (Model 20-15) (Model 50-3)	40	36	
UAT (Model 30)	2	2	
Total	159	130	

*One Aircraft to replace the one lost by Aeronaves which was actually on EAL production position switched to Aeronaves in order that the Mexican carrier could begin DC-8 service as early as possible.

CONVAIR 880, 880M AND 990

Airline	Total on order	Delivered as of April 30, 1961	Scheduled for delivery between May 1 and Dec. 31, 1961
Alaska (880M)	1	....	1
American (990)	25	....	4
Avensa (880M)	2	....	2
Civil Air Transport (880M)	1	....	1
Delta (880)	13	10	3
FAA (880M)	1	....	1
Japan Air Lines (880M)	5	....	3
Northeast (880)	6	6	....
Real (990)	3	....	3
SAS (990)	2	....	1
Swissair (990)	7	....	7
TWA/Hughes Tool Co. (880)	24	14	10
Unidentified Purchaser (880M)	7	....	7
Total	97	30	43

Projected Delivery Schedules for 1962 (by quarter):

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
American (990)	8	9	4	0
Japan Air Lines (880M)	0	2	0	0
SAS (990)	1	0	0	0

LOCKHEED ELECTRA

Airline	Total on order	Delivered as of April 30, 1961	Scheduled for delivery between May 1 and Dec. 31, 1961
Ansett/ANA	3	3	....
American	35	35	....
Braniff	9	9	....
Cathay Pacific	2	2	....
Eastern	40	40	....
FAA	1	1	....
Garuda Indonesian	3	3	....
*General Motors	1	1	....
KLM	12	12	....
†National	14	14	....
Northwest	18	15	3
‡Pacific Missile Range	1	1	....
Qantas	4	4	....
Pacific Southwest	4	3	1
TEAL	3	3	....
Trans-Australia	3	3	....
Western	12	12	....
Navy (YP3V-1)	1	1	....
Total	166	162	4

*Sold to Los Angeles Dodgers baseball team.
†National order cut nine aircraft.
‡Under negotiation for renewal of lease or possible purchase.

BOEING 707, 720, 727

Airline	Total on order	Scheduled for Delivery as of April 30, 1961	Scheduled for delivery between May 1 and Dec. 31, 1961
Air India (420)	4	3	1
Air France (320)	20	17	0
American *(25-120) (15-720B) (1-120B) *(10-720)	51	44 (26-120) (18-720)	7
Avianca (720B)	2	0	2
BOAC (420)	15	15	0
Braniff (5-220) (3-720)	8	7	1
Continental (4-120)	5	5	0
Cubana (2-120)	2	(Leased to Western)	
Eastern (15-720) (40-727)	55	0	12
El Al (420)	3	0	2
Ethiopian (720B)	2	0	2
FAA (720)	1	0	1
Ghana (420)	2	0	0
Irish (720)	3	3	0
Lufthansa (5-420) (8-720B) (12-727)	25	6	3
Northwest (720B)	6	0	6
Pacific Northern (2-720)	2	0	0
PanAm (6-120) (26-320) (5-320B)	37	29	3
Qantas *(7-120) (3-138B)	10	7	3
Sabena (320)	5	5	0
So. African (420)	3	3	0
TWA (15-120) (12-320)	27	27	0
United (29-720) (40-727)	69	18	0
Varig (420)	2	2	0
Western (720B)	4	1	3
USAF (VC-137)	3	3	0
Total	366	195	46

Projected delivery schedules for 1962 and 1963 (by quarter):

	1	2	3	4
1962	19	14	0	0
1963	0	0	0	6

* Models noted thus to be converted to "B" (fan-engine) version.

Boom Continues on North Atlantic; S

By ERIC BRAMLEY

TREMENDOUS GAINS in passengers, cargo and mail were scored in 1960 by the North Atlantic IATA airlines.

Passengers on regular schedules of 17 carriers—two U.S. and 15 foreign flag—totaled 1,760,772, a 28.8% increase over 1959. This was the biggest gain since 1952, the first year of tourist service.

Cargo jumped a record 40.5% to 50,697 tons. Mail tonnage of 17,540 was up 27.6%, largest increase in years.

As carriers built up their jet fleets, seating capacity skyrocketed. The 28.8% passenger increase was accompanied by a 32.3% gain in seats for sale. But with bigger airplanes, flights decreased 3.9%. Overall load factor was down 1.8 points to 64.2%.

AIRLIFT's analysis of regularly-scheduled flights from the U.S. and Canada to Europe also shows that:

Four out of five passengers (82%) used economy flights.

Two out of three passengers rode foreign flag lines.

First-class traffic showed its smallest gain (4.1%) in six years, although there were 24.7% more seats for sale.

TWA's great surge maintained the U.S. carriers' position. The share of the total market held by TWA and Pan American slipped only 4/10 of 1%. Excluding Canada, where the two U.S. lines do not compete, the decline was only 1/10 of 1%.

Foreign flag lines got 65.3% of the total traffic, against 64.9% in 1959. Excluding Canada, they handled 60.2%, with PAA and TWA flying 39.8%.

PAA, which had jets before other carriers and which already had a high traffic volume, increased seats by 25.6% last year, but traffic gained only 9.6%. Load factor fell 10 points. However, PAA remained by far the frontrunner, carrying almost one out of every four passengers.

For TWA, 1960 was the first big jet year. Seating capacity jumped 70.9% and traffic gained 67.2%. Its share of the total market increased from 10.6% in 1959 to 13.8% last year, while its share of the U.S. market went up from 12.1% to 15.9%. PAA's share of the total fell from 24.5% to 20.9%, and its share of the U.S. from 27.8% to 23.9%.

Again excluding Canada, the foreign lines did a better job of filling their increased seating capacity. Their traffic went up 27.7% while seats increased 27.5%. TWA almost filled its added seats, but PAA didn't, and the two combined went up 26.9% in traffic and 41.2% in capacity.

Economy class handled 1,444,261 out of 1,760,772 total passengers, and provided 2,134,901 out of 2,740,648 seats. Load factor of 67.6% compared with 52.8% for first-class.

Foreign lines hauled 59.9% of the cargo, compared with 57.8% in 1959. In the U.S. market, they carried 55.9% against 44.1% for PAA, TWA and S&W.

The three U.S. lines dominated the mail field, with 67.6% of total and 71.5% of U.S.

Including U.S. and Canada, top five passenger carriers, in order, were PAA, BOAC, TWA, KLM and Air France. Top five U.S.-Europe: PAA, TWA, BOAC, AF and SAS.

The year saw start of Atlantic service by Air India—the 18th operator (including all-cargo S&W). It was also the year in which tourist service was discontinued. Air France suffered a strike, and Sabena was hit by diversion of equipment to fly people out of the Congo. Both lines, however, had traffic increases. ■

UNITED STATES TRAFFIC

	Air France	Air India	Alitalia	BOAC	Luft-hansa	El Al Israel
FIRST CLASS						
Rev.-passengers ..	25,985	2,088	8,657	40,365	12,583	2,540
Seat capacity	46,514	5,176	21,691	82,977	22,166	7,664
% seats used	55.9	40.3	39.9	48.6	56.8	37.1
1st class flights ..	2	.....	.....	243	31	.....
Mixed flights	1,564	166	1,099	3,148	1,087	479
Cargo flights	.....	.....	.....	10	376	.....
Cargo (tons)	2,426.6	115.6	1,515.5	3,029.2	3,336.2	649.0
Mail (tons)	394.1	5.8	392.4	1,303.7	979.5	69.5
TOURIST						
Rev.-passengers ..	.....	.....	.....	7,742	827	.....
Seat capacity	.....	.....	.....	16,117	2,837	.....
% seats used ...	.....	.....	.....	48.0	29.2	.....
No. flights	.....	.....	.....	.....	.....	.....
ECONOMY CLASS						
Rev.-passengers ..	99,972	8,238	50,520	140,404	94,553	24,312
Seat capacity	138,423	16,152	71,479	212,236	113,464	35,628
% seats used	72.2	51.0	70.7	66.2	74.5	68.2
No. flights	2	.....	4	139	35	2
ALL TRAFFIC						
Rev.-passengers ..	125,957	10,326	59,177	188,511	97,963	27,152
Seat capacity	184,937	21,328	93,170	311,330	138,467	43,292
% seats used	68.1	48.4	63.5	60.6	70.7	62.7
No. flights	1,548	166	1,053	3,530	1,153	481

UNITED STATES TRAFFIC

	Air France	Air India	Alitalia	BOAC	Luft-hansa	El Al Israel
FIRST CLASS						
Rev.-passengers ..	14,074	996	4,481	19,607	5,742	1,362
Seat capacity	23,378	2,588	11,045	41,884	11,040	3,840
% seats used	60.2	38.5	40.6	46.8	520	35.5
1st class flights ..	1	.....	.....	122	16	.....
Mixed flights	785	83	527	1,591	540	240
Cargo flights	.....	.....	.....	5	188	.....
Cargo (tons) ...	1,243.3	49.0	930.8	1,581.5	1,469.6	406.7
Mail (tons)	310.0	0.3	379.7	1,122.4	934.8	55.5
TOURIST						
Rev.-passengers ..	.....	.....	.....	3,878	641	.....
Seat capacity	.....	.....	.....	8,023	1,446	.....
% seats used	.....	.....	.....	48.3	44.4	.....
No. flight	.....	.....	.....	.....	.....	.....
ECONOMY CLASS						
Rev.-passengers ..	53,747	3,987	26,711	73,028	42,467	12,371
Seat capacity	69,606	8,076	34,956	106,537	56,418	17,760
% seats used	77.2	48.1	76.6	68.5	75.3	69.7
No. flights	1	.....	24	.....	16	.....
ALL TRAFFIC						
Rev.-passengers ..	67,821	4,983	31,192	96,513	48,850	13,733
Seat capacity	92,984	10,664	45,901	156,444	68,903	21,600
% seats used	72.9	46.8	67.9	61.7	70.9	63.6
No. flights	787	83	527	1,787	572	240

UNITED STATES TRAFFIC

	Air France	Air India	Alitalia	BOAC	Luft-hansa	El Al Israel
FIRST CLASS						
Rev.-passengers ..	11,911	1,092	4,176	20,758	6,841	1,178
Seat capacity	23,136	2,588	10,646	41,093	11,126	3,824
% seats used	51.5	42.2	39.2	50.5	61.5	30.7
1st class flight ..	1	.....	.....	121	15	.....
Mixed flights	779	83	522	1,567	547	239
Cargo flights	.....	.....	.....	5	188	.....
Cargo (tons)	1,183.3	66.6	584.7	1,447.7	1,866.6	243.3
Mail (tons)	84.1	5.5	12.7	181.3	43.7	13.0
TOURIST						
Rev.-passengers ..	.....	.....	.....	3,864	186	.....
Seat capacity	.....	.....	.....	8,094	1,392	.....
% seats used	.....	.....	.....	47.7	13.4	.....
No. flights	.....	.....	.....	.....	.....	.....
ECONOMY CLASS						
Rev.-passengers ..	46,229	4,251	23,809	67,376	42,086	11,971
Seat capacity	68,817	8,076	34,623	105,699	57,046	17,840
% seats used	67.2	52.9	68.8	67.3	73.8	66.9
No. flights	1	.....	4	65	19	2
ALL TRAFFIC						
Rev.-passengers ..	58,136	5,443	27,985	91,998	49,113	13,490
Seat capacity	91,953	10,664	47,269	154,886	69,564	21,664
% seats used	63.2	51.0	59.2	59.4	70.6	61.9
No. flights	781	83	526	1,743	581	241

Seats up 32%, Traffic up 29%

Air Traffic Both Ways Between U.S., Canada and Europe, 1960

											CANADIAN TRAFFIC					
Iberia	Irish	KLM	PAA	Qantas	Sabena	SAS	S&W	Swiss	TWA	U.S. Total	BOAC	CPA	KLM	TCA	Canadian Total	Grand Total
892	45	14,918	88,540	3,348	6,706	18,625	.....	10,795	46,097	284,486	7,122	1,666	4,181	8,811	21,780	306,266
6,384	240	31,252	142,878	6,956	17,080	39,536	.....	20,234	83,830	534,548	15,002	5,216	8,143	10,592	46,953	581,501
14.0	18.8	54.1	62.0	48.1	39.3	47.7	.....	53.4	54.9	53.4	47.5	31.9	51.3	47.4	46.4	52.8
.....	.....	.....	.....	.....	.....	33	.....	.....	.....	309	18	.....	.....	.....	18	327
347	20	1,519	4,825	209	772	1,695	.....	900	3,309	21,089	717	506	457	1,322	3,002	24,091
.....	.....	468	722	.....	80	.....	994	151	341	3,142	.....	.....	26	.....	26	3,168
165.2	197.5	7,315.0	9,667.1	111.6	1,973.6	2,576.4	6,681.1	2,300.4	3,972.4	46,032.4	718.4	181.6	2,427.6	1,337.0	4,664.6	50,697
55.4	45.3	333.6	5,366.2	0.5	237.7	486.6	2,468.2	412.7	4,041.4	16,569.6	292.2	26.2	113.4	538.4	970.2	17,539.8
344	.....	.....	34	.....	21	.....	.....	.....	15	8,983	542	719	.....	.....	1,262	10,245
1,485	.....	.....	109	.....	60	.....	.....	.....	15	20,708	2,053	1,490	.....	.....	3,543	24,246
23.2	.....	.....	18.0	.....	26.0	.....	.....	.....	.....	43.4	26.4	48.3	.....	.....	35.6	42.3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7,558	29,055	99,889	279,132	6,991	63,826	102,905	.....	46,275	197,256	1,240,877	57,799	30,946	35,271	79,377	203,394	1,444,261
19,561	46,790	162,905	393,656	11,982	112,251	162,829	.....	69,571	301,830	1,858,765	74,996	47,047	48,446	105,647	276,136	2,134,901
38.6	62.1	61.3	70.9	58.3	56.9	63.2	.....	66.5	65.3	66.8	77.1	65.8	72.8	75.1	73.7	67.6
.....	466	586	.....	.....	201	530	.....	60	38	2,063	287	74	201	.....	562	2,625
8,794	29,100	116,798	367,706	10,339	70,553	121,530	.....	57,070	243,370	1,534,346	65,455	33,331	39,452	80,188	226,426	1,760,772
27,430	47,038	184,157	536,723	18,938	129,361	202,365	.....	89,805	385,675	2,414,016	92,051	53,753	56,589	124,239	326,632	2,740,648
32.1	61.9	63.4	68.5	54.6	54.5	60.1	.....	63.5	63.4	63.6	71.1	62.0	69.7	71.0	69.3	64.2
347	486	2,108	4,825	209	973	2,258	.....	960	3,347	23,461	1,022	580	658	1,322	3,562	27,043

Air Traffic Westbound Between U.S., Canada and Europe, 1960

											CANADIAN TRAFFIC					
Iberia	Irish	KLM	PAA	Qantas	Sabena	SAS	S&W	Swiss	TWA	U.S. Total	BOAC	CPA	KLM	TCA	Canadian Total	Grand Total
408	24	8,752	45,090	1,505	2,000	10,310	.....	5,320	24,106	144,580	3,597	848	2,176	4,197	10,838	155,418
3,173	120	15,648	71,326	3,516	8,492	19,719	.....	10,055	41,979	267,800	7,562	2,521	4,092	8,932	23,107	290,907
12.9	20.0	55.9	63.2	42.8	33.0	532	.....	52.9	57.4	54.4	47.6	34.4	53.2	47.0	46.9	53.8
.....	.....	.....	.....	.....	.....	16	.....	.....	.....	155	9	.....	.....	.....	9	164
173	10	175	2,407	105	384	848	.....	446	1,653	10,547	360	255	229	663	1,507	12,054
.....	.....	229	346	.....	35	.....	396	79	172	1,440	.....	.....	14	.....	14	1,454
80.4	76.9	3,701.1	5,073.6	31.9	1,066.8	1,390.5	3,186.9	1,193.0	1,854.4	23,336.4	584.1	163.3	1,842.2	935.3	3,524.9	26,861.3
41.2	29.1	263.4	1,135.2	.....	197.1	420.5	608.0	357.3	1,024.7	6,879.2	170.7	14.2	102.1	162.9	449.9	7,329.1
141	.....	.....	28	.....	8	.....	.....	.....	6	4,694	287	395	.....	.....	682	5,376
735	.....	.....	90	.....	30	.....	.....	.....	6	10,329	1,027	796	.....	.....	1,823	12,152
19.2	.....	.....	22.2	.....	26.7	.....	.....	.....	.....	45.4	27.9	49.6	.....	.....	37.4	44.2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3,507	15,953	53,504	150,684	3,511	33,437	52,817	.....	24,362	102,955	653,141	30,001	17,543	19,121	41,758	108,443	761,584
9,768	23,399	76,903	197,241	6,018	86,352	82,058	.....	34,666	160,231	929,942	37,695	23,720	24,271	52,954	138,640	1,068,582
35.9	68.2	69.5	76.4	58.3	59.7	64.4	.....	70.3	68.5	70.2	79.6	74.0	78.8	78.9	78.2	71.3
.....	233	304	.....	.....	107	273	.....	31	14	1,063	143	37	99	.....	279	1,332
4,056	15,977	62,256	195,799	5,016	36,448	63,127	.....	29,682	127,067	802,418	33,885	18,826	21,297	45,955	119,963	922,378
13,676	23,519	92,628	268,630	9,534	64,874	101,177	.....	44,721	192,216	1,208,071	46,284	27,037	28,363	61,886	163,570	1,371,641
29.7	67.9	67.2	72.9	52.6	56.2	62.0	.....	66.4	66.8	66.5	73.2	69.6	75.1	74.3	73.3	67.2
173	243	1,059	2,407	105	491	1,137	.....	477	1,667	11,755	512	292	328	663	1,795	13,550

Air Traffic Eastbound Between U.S., Canada and Europe, 1960

											CANADIAN TRAFFIC					
Iberia	Irish	KLM	PAA	Qantas	Sabena	SAS	S&W	Swiss	TWA	U.S. Total	BOAC	CPA	KLM	TCA	Canadian Total	Grand Total
484	21	8,166	43,450	1,843	3,903	8,315	.....	5,475	21,993	139,906	3,525	798	2,005	4,614	10,942	150,848
3,211	120	15,607	71,552	3,440	8,558	19,817	.....	10,179	41,851	266,748	7,440	2,695	4,061	9,660	23,856	290,594
15.1	17.9	52.3	60.7	53.6	45.6	42.0	.....	53.8	52.6	52.4	47.4	29.6	49.5	47.8	46.9	51.9
.....	.....	.....	.....	.....	.....	17	.....	.....	.....	154	9	.....	.....	.....	9	163
174	10	764	2,418	104	388	847	.....	464	1,656	10,542	357	251	228	689	1,495	12,037
.....	.....	239	376	.....	48	.....	608	72	169	1,702	.....	.....	12	.....	12	1,714
84.8	120.6	3,613.9	4,593.5	79.7	906.8	1,185.9	3,494.2	1,107.4	2,118.0	22,696.0	134.3	18.3	585.4	401.7	1,139.7	23,835.7
14.2	16.2	70.2	4,220.0	0.8	40.6	66.1	1,890.2	85.4	3,016.7	9,690.4	121.5	12.0	11.3	376.5	520.3	10,210.7
203	.....	.....	14	.....	13	.....	.....	.....	9	4,289	256	324	.....	.....	580	4,869
750	.....	.....	99	.....	30	.....	.....	.....	9	10,374	1,026	694	.....	.....	1,720	12,094
27.1	.....	.....	14.1	.....	43.3	.....	.....	.....	.....	41.3	25.0	46.7	.....	.....	33.7	40.3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4,051	13,102	46,376	128,448	3,480	30,189	50,089	.....	21,913	94,301	587,736	27,789	13,383	16,150	37,619	94,941	682,677
9,793	23,399	75,922	196,442	5,964	85,899	80,771	.....	34,905	151,599	928,823	37,301	23,327	24,175	52,693	137,496	1,066,319
41.4	56.0	61.1	65.4	58.4	54.0	62.0	.....	62.8	62.2	63.3	74.5	57.4	66.8	71.4	69.1	64.0
.....	233	282	.....	.....	94	257	.....	29	24	1,010	144	37	102	.....	283	1,293
14,738	13,123	54,542	171,912	5,323	34,105	58,403	.....	27,388	116,303	731,931	31,570	14,505	18,185	42,233	106,443	838,394
13,754	23,519	91,529	268,093	9,404	64,487	100,588	.....	45,084	193,459	1,208,945	45,767	26,716	28,226	62,353	163,062	1,369,807
34.4	55.8	59.6	64.1	56.6	52.9	58.1	.....	60.7	60.1	60.7	69.0	54.3	64.3	67.7	65.3	61.2
174	243	1,046	2,418	104	482	1,121	.....	483	1,680	11,706	510	288	330	659	1,787	13,493

At Long Last, Cargo Tops a Billion

Airfreight is up 17.5% as U.S. airlines operate 1,024,930,361 ton-miles

By WALLACE I. LONGSTRETH

THE U.S. AIRLINE INDUSTRY eased past the billion ton-mile for cargo operations in 1960, but nobody raised an eyebrow. Other matters—rates, new equipment, routes, and a fast growing air freight forwarder industry—commanded the attention.

Total ton-mile figure reached 1,024,930,361. It includes 6.7 million ton-miles generated by the supplemental airlines in non-military freight operations. The figure does not include tonnage hauled by the non-regulated air carriers. (Part 45 airlines) nor traffic hauled in private planes.

In the all-inclusive total are the ton-miles for express, freight, and mail of the U.S. domestic trunks, the U.S. international airlines, the Alaskan airlines, the all-cargo lines, the local service airlines, the Hawaiian airlines, the certificated helicopter operators, and the supplementals.

Last year (1959), the all-inclusive total was 860 million ton-miles. The gain over 1959 amounts to 19%. Mail did well. It gained 20.5% over 1959—up to 249.6 million ton miles from 198.6. Express gained 4%—to 59 million ton-miles. Air freight, led by the international airlines, gained 17.5%—from 604 million ton-miles in 1959 to

IN 1961 all eyes are watching one airplane, the Canadair CL-44 (left), which debuts about mid-year. Canadair Photo

709.8 million ton-miles in 1960. The international airlines posted a gain of 21.8%.

The airlines did not make much money in 1960. For the domestic trunks, 1960 produced net operating income of $34.8 million from total operating revenues of $1.9 billion. Cargo operation contributed $141.3 million, or 7.3% of the total.

Twenty years ago, the trunks grossed $76 million. Cargo contributed $22 million. Mail alone produced $19.9 million, or 26.21% of gross. Mail revenue was inflated by subsidy. Even so, some of the big men in the industry wondered if air cargo would not amount to something some day.

The DC-4 was in production. This airplane, a joint effort of the airlines and Douglas Aircraft, gave promise of low enough direct operating costs to permit volume operations in air freight at a profit.

How it all began

C. R. Smith (American Airlines), W. A. Patterson (United Air Lines), T. B. Wilson (then president of Trans World Airlines), and Paul H. Brattain (first vice president of Eastern Air Lines, substituting for Capt. Eddie Rickenbacker), met with Edgar S. Gorrell (founding president of the Air Transport Association), to create an organization to explore air freight.

On April 28, 1941, Air Cargo, Inc. was formed. ACI was to operate as a research organization. It was to explore fields, rates, markets, equipment, procedures, and potential. Before ACI could develop the answers sought, the nation and the DC-4s went to war.

ACI never recovered as a research organization. For several years ACI existed only as a charter in the bottom drawer of ATA's general counsel, Stuart G. Tipton. In 1947, the charter was dusted off, and ACI went back to work as a ground service organization, financed by airline funds based on each carrier's participation in the express and freight traffic. ACI concentrated on pick up and delivery.

$6 million for cartage

In 1950, ACI was directed by its stockholders (every scheduled U.S. airline is a stockholder) to become self-supporting. A big profit was not wanted. The airlines merely wanted ACI to cover its own expenses.

Emery F. Johnson, then secretary, was made general manager. By 1952, ACI was paying its own way. From 1952 through 1957, total profit was some $4,000—an average profit of $800 a year for five years.

Air freight pick up and delivery is growing rapidly—doubling every five years. In 1960 ACI paid cartage contractors slightly over $6 million, for handling 2,068,644 shipments. For the past five years, shipments handled by ACI cartage contractors is as follows:

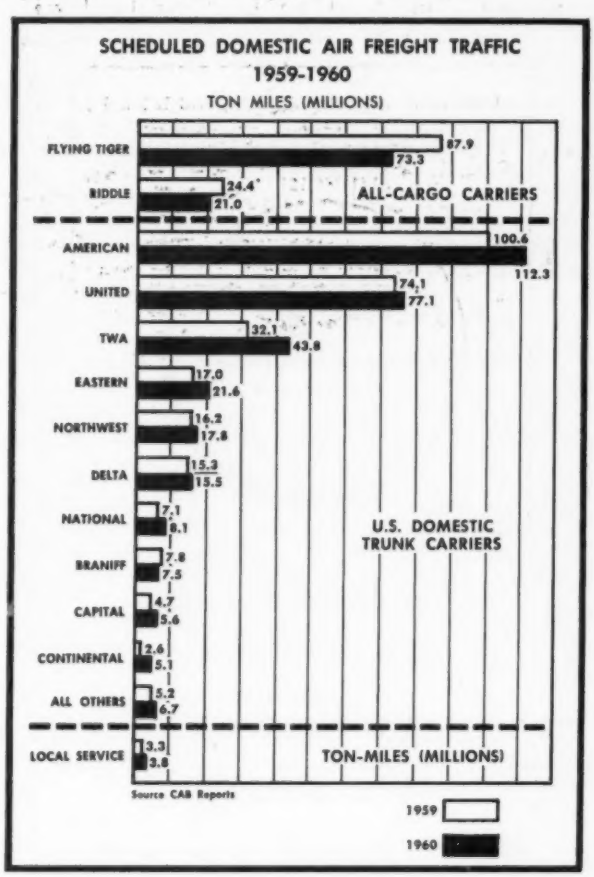
Year	No. of Shipments	Year	No. of Shipments
1956	1,230,673	1959	1,957,767
1957	1,769,882	1960	2,068,644
1958	1,715,566		

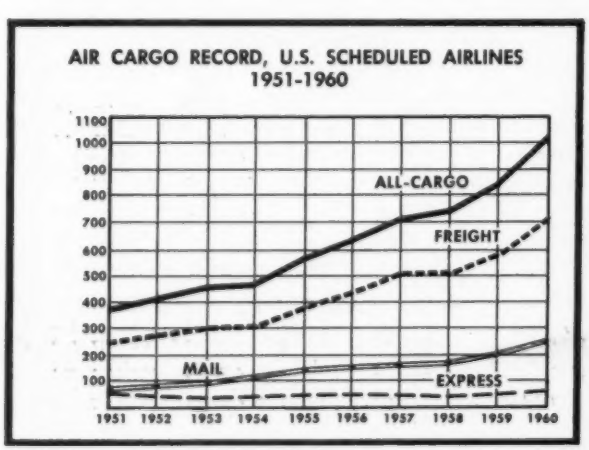
For 1961, it is estimated that ACI contractors will handle 2,336,500 shipments.

Air freight is still a small shipment business. In 1960, the shipments handled by ACI cartage contractors averaged 18 pounds. For the airlines, the average shipment weight was a little higher, probably near 165 pounds. The all-cargo lines fared even better. Average shipment for them has been estimated at 225 pounds.

Contributing to the increased weight of the carriers are the shipments of the air freight forwarders. Forwarders consolidate many small shipments into large ones in order to take advantage of the reduced rates airlines offer for large shipments.

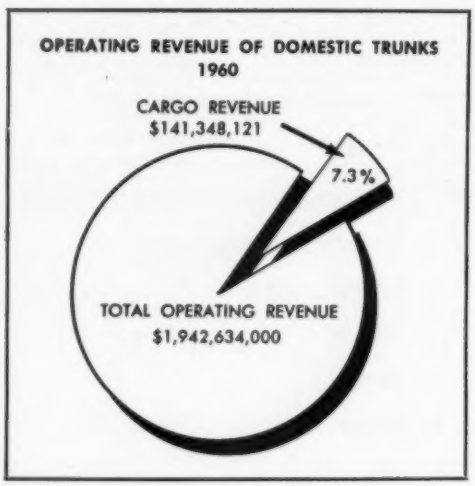
Shulman, Inc., for example, in 1960 consolidated 323,859 shipments into 8,234. Not all forwarders consolidate at the same rate. Emery Air Freight, the largest of the air freight forwarders (gross in 1960, $16,243,399), received 620,192 shipments which were tuned over to the airlines as





Local Airline Cargo Results

Airline Ranking	Total Cargo ton-miles		Mail ton-miles		Express ton-miles		Freight ton-miles	
1. No. Central..	1,544,809	1	493,328	1	542,708	3	508,773	
2. Frontier	1,207,182	2	332,482	9	120,674	1	754,026	
3. Allegheny ...	1,085,631	6	204,581	2	358,015	2	523,035	
4. Trans-Texas ..	892,201	3	265,128	7	150,918	4	476,155	
5. Ozark	879,768	5	208,492	3	309,379	5	361,897	
6. Mohawk	658,361	4	218,066	5	215,596	8	224,699	
7. Piedmont	575,752	10	166,610	6	170,399	6	238,743	
8. Southern	467,761	8	179,054	8	126,409	9	162,298	
9. West Coast..	464,883	9	174,452	10	59,794	7	230,637	
10. Pacific	357,636	7	196,837	11	53,891	12	106,908	
11. Lake Cen. ...	294,235	13	71,279	4	222,956	13	.....	
12. Central	292,665	11	104,611	12	47,462	10	140,592	
13. Bonanza	265,442	12	99,205	13	41,087	11	125,150	
Total	8,986,326		2,714,125		2,419,288		3,852,913	
% of Total ...	100		30.2		26.9		42.9	



AIR CARGO REVENUES

Airline	Freight Revenues	Express Revenues	Mail Revenues	Total Cargo Rev.	Cargo % Total Op. Revenue
DOMESTIC					
American	$ 24,236,150	$ 4,729,991	$ 7,896,514	$ 36,862,655	8.7%
Braniff	2,124,845	801,013	1,981,706	4,907,564	6.5
Capital	1,726,844	1,543,288	2,381,768	5,651,900	5.4
Continental ...	1,255,389	513,377	956,541	2,725,307	4.5
Delta	4,005,580	1,501,322	2,247,507	7,754,409	6.0
Eastern	5,489,881	2,613,958	5,343,592	13,447,431	5.1
National	2,122,156	333,015	1,258,221	3,713,392	5.6
Northeast	886,925	269,172	568,964	1,725,061	4.5
Northwest	4,611,887	1,330,609	2,510,188	8,452,684	9.8
TWA	9,573,515	3,312,370	6,291,037	19,176,922	6.9
United	17,467,030	4,319,410	12,006,667	33,793,107	9.5
Western	1,290,908	518,867	1,327,914	3,137,689	4.9
Total	$ 74,791,110	$ 21,786,392	$ 44,770,619	$141,348,121	7.3%
INTERNATIONAL					
American	$ 617,627	$ 3,663	$ 42,878	$ 664,168	9.7%
Braniff	605,396	.....	247,422	852,818	7.9
Caribair	142,133	.....	34,223	176,356	0.4
Delta	94,833	.....	37,272	132,105	4.0
Eastern	649,585	.....	569,758	1,219,343	4.1
National	28,634	4,442	11,586	44,662	2.5
Northwest	4,189,978	52,598	7,170,110	11,418,683	31.7
Panagra	2,467,922	.....	665,271	3,133,193	15.7
Pan Am	41,147,925	14,457	24,201,585	65,363,967	15.9
Trans. Carib. ..	NA	NA	NA	NA	
TWA	5,709,895	.....	7,959,866	13,669,761	13.5
United	432,918	45,654	811,579	1,290,151	5.5
Western	83,451	.....	37,412	120,863	2.5
Total	$ 56,170,294	$ 120,814	$ 41,788,962	$ 98,080,070	15.0
ALL CARGO					
Fly. Tiger	12,733,646	210,698	206,888	13,151,232	49.8
Riddle	4,248,485	125,969	100,963	4,475,417	68.8
Aerovias	NA	NA	NA	NA	NA
S&W	6,733,296	.....	4,200,924	10,934,270	65.6
Total	$ 23,715,427	$ 336,667	$ 4,508,825	$ 28,510,919	60.7

288, 599 shipments, a reduction of 331,593.

Airline air freight rates, and particularly the volume rates, are almost a matter of life or death for air freight forwarders. In 1960, air freight rates were in a turmoil.

The Civil Aeronautics Board last year had indicated some doubt as to the value of the minimum rate orders for domestic traffic and had publicly declared in favor of reducing international air freight rates.

International airlines of almost every nation agreed that rates should come down, but conferences on rates by the International Air Transport Association did not go well. The stumbling block was the rate structure across the North Atlantic. Even though there was agreement that rates should come down, there was a sharp division on how.

U.S. airlines favored general commodity rates with many volume breaks—rate reductions based on volume regardless of the commodity being shipped.

European airlines generally favored a specific commodity rate structure. The specific commodity rates give reductions to certain items which are presumed to move frequently or in great quantities.

Compromise protested

In early 1960 a compromise structure incorporating both general and specific commodity rates was adopted. Protests were immediate. Leading the opposition were the air freight forwarders. The forwarders charged that the specific commodity rates negated the general commodity rates and left little excuse for consolidating.

Another conference later in the year produced nothing except dissension. In January of 1961, after another conference, there was still no agreement.

While the airlines were conferring, forwarders were figuring out their own solution to the international rate problem —charters. Shipments were consolidated and moved across the Atlantic at planeload rates which were considerably less than the controlling specific commodity rates.

When U.S. forwarders began to charter aircraft for planeload movements from Europe to the U.S., some of the European airlines rebelled, and severed notice of withdrawal from the IATA cargo rate commitments.

An open rate situation was narrowly averted in April of 1961 when the U.S. CAB agreed to halt westbound forwarder charters, temporarily, if the airlines would gather for one more conference and develop a system of rates which would be acceptable to all interested parties. The CAB favored a general commodity rate structure with volume breaks starting at about 100 pounds.

There is a real urgency to develop a rate structure which will fill the rapidly expanding international air freight capacity. In July, Seaboard & Western Airlines plans to introduce the Canadair CL-44 freighter. This swing-tail airplane will haul 66,000 pounds of cargo across the Atlantic at speeds in excess of 350 miles an hour.

Capacity continues to rise

The CL-44s will be in addition to many converted piston engine passenger planes which have capacities ranging from 30,000 to 42,000 pounds (transatlantic). Capacity also increases with each jet passenger airplane delivered. As turbofan-powered jets come in, capacity in the passenger aircraft will be limited only by the cube of the belly compartments.

For domestic air freight, rates and tariffs presented almost as complex a problem as for international.

A 25-mile rule-of-thumb limit for air freight pick up and delivery was challenged by an air freight forwarder. An investigation was instituted by the Board. From the investigation stemmed another inquiry which involves the whole process of tariff filing.

Also under active consideration in 1960 was the all-

1960 Traffic Ratings—Trunks and International

Rank	Airline	Mail Ton-Miles
1	PAA	60,138,458
2	United	39,202,571
3	TWA	36,548,759
4	Northwest	24,424,036
5	American	23,630,696
6	Eastern	16,293,401
7	Capital	6,511,819
8	Delta	5,962,582
9	Braniff	5,644,661
10	Western	3,986,701
11	National	3,977,055
12	Continental	2,362,040
13	Northeast	1,522,003
14	Panagra	1,501,177
15	Caribair	26,278
16	Trans Carib.	.....

Rank	Airline	Express Ton-Miles
1	American	12,059,377
2	United	11,415,746
3	TWA	9,087,768
4	Eastern	6,418,805
5	Delta	3,680,696
	Capital	3,474,432
7	Northwest	3,422,809
8	Braniff	1,978,074
9	Continental	1,420,494
10	Western	1,199,033
11	National	793,982
12	Northeast	489,645
13	PAA	.....
14	Panagra	.....
15	Trans Carib.	.....
16	Caribair	....

Rank	Airline	Freight Ton-Miles
1	PAA	136,979,182
2	American	115,193,950
3	United	79,042,659
4	TWA	61,518,764
5	Northwest	29,090,652
6	Eastern	24,643,920
7	Delta	15,793,830
8	Braniff	9,104,978
9	National	8,141,076
10	Panagra	6,695,857
11	Capital	5,621,139
12	Continental	5,127,410
13	Trans Carib.	4,553,081
14	Western	4,351,718
15	Northeast	2,657,844
16	Caribair	94,236

Rank	Airline	Cargo Ton-Miles
1	PAA	197,117,640
2	American	150,884,023
3	United	129,660,976
4	TWA	107,155,291
5	Northwest	56,937,497
6	Eastern	47,356,126
7	Delta	25,437,108
8	Braniff	16,727,713
9	Capital	15,607,390
10	National	12,912,113
11	Western	9,537,452
12	Continental	8,909,944
13	Panagra	8,197,034
14	Northeast	4,699,492
15	Trans Carib.	4,553,081
16	Caribair	120,514

Mail statistics include foreign mail. Freight includes international express.

cargo experiment—does the nation need all-cargo airlines, and if so, what form should they take. The cargo case also ties into the investigation of the minimum rate orders.

In 1948, the CAB set a floor under air freight rates. Several times since then, the rates have been modified, but a floor still exists.

In 1960, the Board wondered if a floor was still necessary. Opinions of interested parties ranged from "junk the minimums immediately," through "have further investigations before making a decision" to "keep the minimum rates as is."

Decisions in these four areas will determine how far and how fast air freight progresses in the U.S. In all four instances, the decision of the Board is expected this year.

As for the international airlines, domestic air freight capacity is climbing rapidly. Riddle Airlnes already has taken delivery on some British-built, turboprop Argosy air freighters. This is a truck-bed height airplane which can be loaded from either the front or rear end. It is equipped with loading mechanisms which permit loading or unloading the entire plane in approximately 10 minutes.

About July 1, The Flying Tiger Line will introduce the CL-44. The new planes will be in addition to converted DC-7 series or Super Constellation aircraft being operated by the all-cargo lines and most of the trunks. And, as with the international airlines, the turbofan jets now being delivered provide many ton-miles of fast freight capacity.

Within the framework of the minimum rate orders, the airlines are already moving toward lower rates. During 1960, the Flying Tigers were working on a new tariff.

This tariff was to be a new approach to air freight tariff making. Instead of the usual general and specific commodity rates, the Tigers said they would lean heavily on class rates which were to be a function of density. This has not yet been filed.

Meanwhile, domestic rates are coming down in an effort to attract more traffic to fill already existing capacity and to pave the way for more efficient aircraft.

In 1960, there was an expansion of air-truck service. This is an arrangement for connecting motor truck service for air freight shipments moving from or to points not served by an airline.

Enough of this traffic was located to persuade the scheduled airlines to adopt an industry approach. Air Cargo, Inc. was directed to coordinate air-truck contracts, to serve as the clearing house for the exchange of monies between the airlines and the truckers, and to publish a guide showing airlines, truckers, and shippers what connecting truck services were available. ACI's air-truck guide is due to be published in mid-1961. ■

1960 STATISTICS FOR LARGER AIR FREIGHT FORWARDERS

FORWARDER	GROSS REVENUE DOMESTIC	GROSS REVENUE INT'L	GROSS REVENUE TOTAL	EXPENSES AIRPORT	EXPENSES TOTAL	NUMBER OF SHIPMENTS RCV'D FROM SHIPPER	NUMBER OF SHIPMENTS CONSIGNED TO AIRLINE
ABC Air Freight Co.	$ 1,915,162	$	$ 1,915,162	$ 1,218,336	$ 1,905,506	146,283	89,293
Air Cargo Consolidators	133,660	931,843	1,065,503	853,252	1,104,704	13,228	12,128
Air Dispatch	2,892,308	....	2,892,308	2,000,003	2,954,258	155,250	95,557
Air Express International*	44,379	1,396,625	1,975,314	1,124,128	2,018,632	36,582	10,057
Airborne Freight Corp.*	N.A.	N.A.	5,259,821	3,811,434	5,145,374	121,517	53,424
Air-Land Freight Consolidators	590,283	184,103	774,386	478,133	790,365	18,327	6,460
Allied Air Freight	529,166	852,867	1,382,033	847,133	1,386,222	42,003	5,985
Peter A. Bernacki	N.A.	N.A.	781,650	490,565	812,565	N.A.	N.A.
BOR-Air Freight Co.	N.A.	N.A.	766,853	358,824	684,934	98,777	7,043
W. J. Byrnes & Co. of New York	554,478	....	554,478	153,663	537,881	1,061	243
Emery Air Freight Corp.	14,064,053	2,170,089	16,243,399	7,706,466	14,862,279	620,192	288,599
F-A Air Freight Corp.	686,430	....	686,430	227,933	661,801	27,226	10,542
Freedman & Slater	....	725,624	725,624	182,985	698,317	4,308	4,308
Hawaiian Freight Forwarder	444,616	441,754	914,374	599,484	907,759	12,733	1,296
Hansel, Brukman & Lorbacker	....	1,475,831	1,475,831	264,290	1,459,020	3,648	2,340
Inter-Maritime Forwarding Co.	....	1,670,737	1,670,737	307,317	1,671,447	5,939	5,939
Pacific Air Freight	N.A.	N.A.	684,134	421,632	680,714	28,061	6,871
Sea-Maritime Cargo Service*	....	N.A.	892,958	660,222	897,234	7,989	2,447
Shulman, Inc.	3,718,852	....	3,718,852	1,557,738	3,808,852	323,859	8,234
United Parcel Service	2,161,919	....	2,161,910	1,246,991	2,108,742	1,247,111	11,260
W. T. C. Air Freight	4,269,693	....	4,269,693	1,728,123	4,299,830	135,131	17,743
Wings & Wheels Express	2,769,190	....	2,769,190	1,349,249	2,734,956	148,986	48,218
World Wide Services	N.A.	N.A.	1,223,638	818,496	1,206,320	14,326	6,927
Grand Total (est)	....	....	62,251,264	30,827,661	60,512,906	3,397,286	91,970

* 1st 6 months only

TURBOFAN entry by American highlights '61 trunk scene.

Jet Seat Battle Juggles Trunk Rankings

By JOSEPH S. MURPHY

THE U.S. TRUNK AIRLINES, deep in the throes of reshaping their fleets, their routes and even their ranks, have entered the most explosive era in their history.

Competition is at its worst. Traffic growth is falling far below estimates. A major shift from first-class to coach travel is cutting deeply into revenues. And profits are infinitesimally small at a time when dollar commitments for new jets are at an all-time peak.

Some measure of the heat of the competition is evident in an analysis of 1960 operating results. From a total fleet of 65 jets at the start of the year (five of the twelve had none), U.S. trunks bulged this number to 109, a 68% increase, by December 31.

While the overall trunk industry was reaping a paltry 4.5% increase in passenger-miles, individual airlines varied from gains of up to 31% to losses of more than 8%. Similarly, as the industry gained only 1.7% in passengers over 1959, four airlines recorded declines up to 7.3% while eight others had gains ranging from 1.7 to 20.2%.

In one of the stormiest competitive periods they have yet faced, here's how individual airlines fared:

American: Top ranking U.S. airline both in passengers and passenger-miles, American showed a 6.1% growth in passengers and 11.9% in pass.-miles to account for 21.3% of domestic business. But despite its commanding position, AA entered 1961 facing the sternest challenge yet made to its leadership.

The fast buildup of competition on all fronts, loss of two 707s in training mishaps, delayed Convair 990 deliveries and a conversion program to turbofans have placed it at a temporary disadvantage until late '62.

With the Capital-United merger becoming a reality in June, AA will fall short of the new combine in every category except cargo. Only a merger of its own, perhaps one which could give it an entry into the Florida market, seemingly would permit American to regain the top spot in 1962.

United—stocked to the hangar ceiling with 32 DC-8s and 13 Boeing 720s with still more to come, UAL rebounded sharply from its jet-shy embarrassment of 1959. Gaining 10.5% in passenger miles and 7.1% in passengers over '59, it accounted for 19.3% of the trunk operations.

In an atmosphere of turbine-powered "seat warfare," United enjoys the distinction of being able to produce the most jet seats. Although modernization of Capital's route network will strain its abilities somewhat, UAL by midsummer introduces its third jet, the Caravelle, to further enhance its competitive position. Although all signs point to major gains for the combined UAL-Capital operation, even at 1960 levels the merged airline will account for 25% of all domestic trunk business.

TWA: No. 3 among U.S. trunks with 15.2% of the passenger-miles, TWA declined slightly from '59 as passengers dropped 3.8% and pass.-miles 2.6%. Handicapped by the financial freeze which delayed delivery of its 880s, TWA more than offset its domestic dip with a healthy 10% improvement in both passengers and passenger miles over 1959.

Eastern—Hardest hit of the "Big Four" by a combination of competition, the Electra slowdown and a pilot strike, Eastern saw its share of domestic trunk business drop from 15.6% in '59 to only 13.7% in '60. Passenger miles slid 8.8% and revenue passengers dropped 6.7%, second only to Capital's 7.3%.

But despite its setbacks of last year, EAL's outlook is far from gloomy. Significant management decisions dealing with piston transport retirement, improved passenger service and new equipment planning failed to show their full effects in '60, but will improve Eastern's position in the months ahead. A newly awarded Miami-Dallas/Ft. Worth

DOMESTIC TRUNK FINANCES 1960 vs. 1959

Airline	Passenger Revenues 1960	Passenger Revenues 1959	Total Operating Revenues 1960	Total Operating Revenues 1959	Total Operating Expenses 1960	Total Operating Expenses 1959	Total Operating Income 1960	Total Operating Income 1959
American	$377,167,436	$332,367,210	$421,605,040	$370,935,635	$396,883,573	$346,417,570	$24,721,467	$24,518,065
Braniff	68,983,544	60,122,699	75,751,093	66,223,773	72,447,028	60,840,176	3,304,065	5,383,597
Capital	96,845,390	101,785,121	104,239,476	108,488,656	110,581,018	108,237,776	—6,341,542	250,880
Continental	56,735,907	42,828,402	61,047,582	45,983,531	54,635,481	42,130,389	6,412,101	3,853,142
Delta	117,680,613	94,828,528	128,376,357	104,098,282	119,230,814	98,690,192	9,145,543	5,408,090
Eastern	243,650,462	254,041,169	263,796,292	271,921,543	269,662,608	259,932,518	—5,866,316	11,989,025
National	59,903,876	61,069,698	66,427,518	67,101,443	73,308,093	67,552,693	—6,880,575	—451,250
Northeast	35,366,220	29,595,435	37,930,921	31,450,234	43,959,690	37,158,149	—6,028,769	—5,707,915
Northwest	75,584,231	76,183,847	86,483,354	85,915,098	84,198,830	81,953,499	1,984,524	3,961,599
Trans World	251,641,114	251,438,501	277,430,801	273,571,135	278,013,121	247,261,238	—882,320	26,309,897
United	313,105,558	273,373,621	355,881,117	314,049,471	346,451,911	295,246,605	9,429,206	18,802,866
Western	59,775,847	55,012,510	64,267,052	58,869,837	58,413,210	47,953,083	5,853,842	10,916,754
Totals	$1,756,440,198	$1,632,646,741	$1,942,636,603	$1,798,608,638	$1,907,785,377	$1,693,373,888	$34,851,226	$105,234,750

Note: Total operating revenues include mail, express and freight.

Source: AIRLIFT research.

TRUNK TRAFFIC RATINGS
1960 vs 1959

Revenue Passengers (000)

Rank	1960 Airline	Rev. Pass.	% of Total	Rank	1959 Airline	Rev. Pass.	% of Total
1	American	8,101	17.8	1	Eastern	8,200	18.4
2	Eastern	7,650*	16.8	2	American	7,637*	17.0
3	United	7,576	16.7	3	United	7,041	15.8
4	TWA	4,967	10.9	4	TWA	5,163	12.7
5	Capital	3,589	7.9	5	Capital	3,871	8.7
6	Delta	3,359	7.4	6	Delta	3,049	6.8
7	Braniff	2,233	4.9	7	Braniff	2,123	4.7
8	Northwest	1,848*	4.1	8	Northwest	1,817	4.1
9	Western	1,668	3.7	9	National	1,765	3.9
10	National	1,642	3.6	10	Western	1,636	3.6
11	Northeast	1,439	3.2	11	Northeast	1,241	2.8
12	Continental	1,337*	2.9	12	Continental	1,112	2.5
	Total	45,409			Total	44,655	

Revenue Passenger Miles
(Millions)

Rank	1960 Airline	Rev. Pass. Miles	% of Total	Rank	1959 Airline	Rev. Pass. Miles	% of Total
1	American	6,290.7	21.3	1	American	5,619.4*	19.7
2	United	5,388.8	19.3	2	United	4,877.8	17.1
3	TWA	4,486.9	15.2	3	TWA	4,606.4	16.2
4	Eastern	4,052.5*	13.7	4	Eastern	4,445.5	15.6
5	Delta	1,840.2	6.2	5	Capital	1,612.5	5.7
6	Capital	1,497.1	5.0	6	Delta	1,559.0	5.5
7	Northwest	1,351.0*	4.5	7	Northwest	1,393.8	4.9
8	Braniff	1,066.3	3.6	8	National	1,113.5	3.9
9	National	1,047.5	3.5	9	Braniff	941.4	3.3
10	Western	951.5	3.2	10	Western	899.1	3.2
11	Continental	891.2*	3.0	11	Continental	677.0	2.4
12	Northeast	566.4	1.9	12	Northeast	519.9	1.8
	Total	29,430.4			Total	28,265.3	

*Operations affected by strike during year

route, although falling shy of its transcontinental objective, will give EAL new long-haul traffic potential.

Aside from the "Big Four" which accounted for 69.5% of passenger-miles, some dramatic gains were registered by the regionals.

Continental, with a 31.6% increase in passenger-miles and 20.2% in passengers continued to demonstrate the ability of a small airline to compete successfully with three big trunks in the lucrative Chicago-Los Angeles market.

Delta, with both DC-8s and 880s dominating its schedules, hiked its passenger-miles 18% and passengers 10.2%. Faced with the pleasant prospect of a new Florida-to-California transcontinental route, its outlook in 1961 is better than ever, particularly in light of its already successful transition to jets.

Braniff, well supplied with four Boeing 707s, overshadowed any effects of its Electra slump with a 13.3% rise in passenger-miles and 5.2% in passengers. Addition of three 720s this year should protect its position.

Northeast, riding the crest of a successful domination of the New York-Boston-Washington shorthaul markets with Viscounts, showed an 8.9% jump in passenger-miles and 6.2% in passengers. With the year-end receipt of Convair 880s, it has ended its 707 lease with TWA and is driving for a healthy slice of the northeast U.S. to Florida business.

Western, hit by the Electra slowdown and late introduction of leased 707s, showed a 5.8% increase in passenger-miles and only 2% in passengers. The delivery of four Boeing 720s and the removal of the Electra speed restriction, however, will improve its 1961 outlook.

Northwest, also hurt by the Electra traffic slump as well as a last quarter labor disruption, dropped 3.1% in passenger-miles. Passengers increased only 1.7%.

National, hard hit by a combination of stiff competition and the Electra slowdown, dipped 5.9% in passenger-miles and 7% in passengers. Its continually declining competitive position is soon to get a healthy shot in the arm with the award by CAB of the prime Miami to Los Angeles/San Francisco nonstop route.

On the financial front, an 8% increase in operating revenues during 1960 were outgained by a 12.7% jump in expenses as only three airlines (Continental, Delta and Northeast) were successful in holding costs in check.

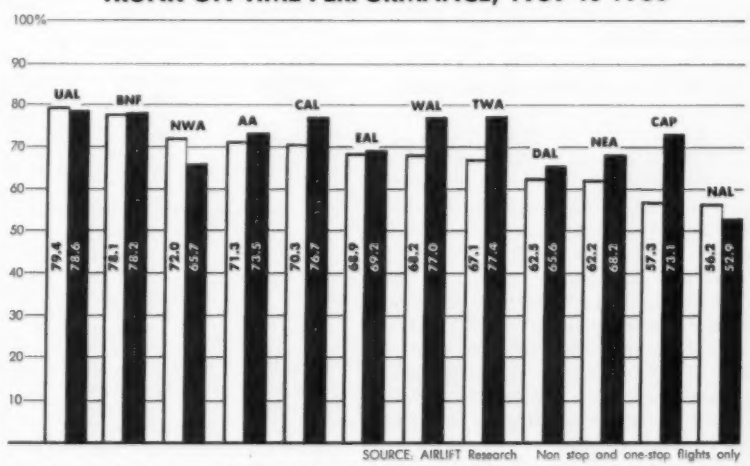
Among the "Big Four," TWA and Eastern were the hardest hit by the widening gap between incoming revenues and outgoing expenses. For EAL, a 3.1% dip in revenues was coupled with a 3.7% rise in costs. TWA gained only 1.3% in revenues while costs rose 12.5%. At American, costs were up 14.5% and revenues 12.2% as the carrier realized only a $210,000 profit improvement over 1959 on a $44.8 million increase on business. At United, although costs rose 17.3%, revenues increased 13.3%. ■

ON-TIME BOXSCORE

1960 Jet Operations

Airline Ranking	On time to 15 min. late
707 & DC-8	
1 TWA	70.2%
2 Continental	69.5
3 Western	67.4
4 American	61.4
5 Delta	56.7
6 United	55.3
7 National	52.8
8 Braniff	51.3
9 Eastern	41.9
10 Northwest	32.6
11 Northeast	31.7
720	
1 United	71.8%
2 American	53.9
880	
1 Delta	35.4%

TRUNK ON-TIME PERFORMANCE, 1959 vs 1960



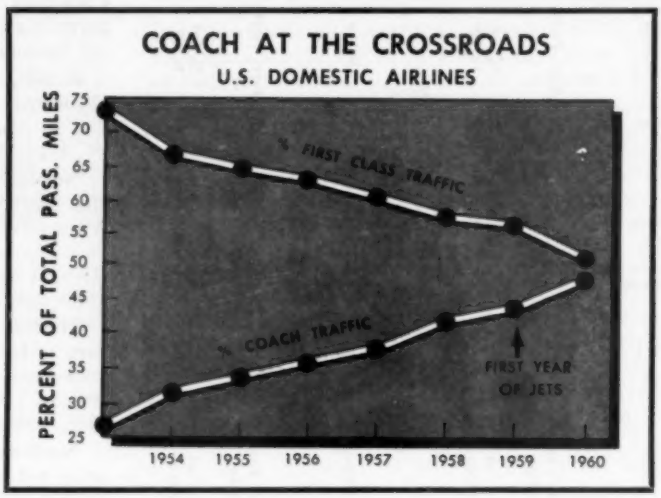
SOURCE: AIRLIFT Research Non stop and one-stop flights only

1960 (black bar) vs. 1959 (white bar). Chart reflects overall piston and jet operations.

Coach to Eclipse 1st Class in '61

Whopping 17% gain during 1960 catapults lower fare traffic to dominant position

How the gap has narrowed since '53. Outlook is obvious →



DOMESTIC coach travel pulled almost even with first-class in 1960, and will go into the lead this year.

Coach passenger-miles of the trunks jumped 17.2% last year to 14,387,206,000. First-class took a substantial 6.4% drop. Of total passenger-miles, 49.22% were coach, 50.78% first-class. Six years ago, 34.92% were coach (see table).

Only 46.1% of 1960's available seat-miles were coach, resulting in a 63.38% load factor. First-class was 56.15%.

With shorter jet flying times, more passengers, particularly those traveling for personal reasons, are deciding they can put up with three-abreast seating and fewer frills in order to save more than $42 on a transcontinental trip (fare is 75% of first-class). In addition, a considerable amount of expense account travel is being diverted to jet coach. Industry observers say it's a sure thing that first-class will be less than 50% of total traffic this year.

The 49.22% coach travel of 1960 compares with 43.64% in 1959. Six trunks carried more coach than first-class, against four the year before. And the two newcomers were big ones—United and Eastern.

The trunk with the highest percentage of its passenger-miles in coach was National, followed in order by Northwest, TWA, United, Eastern and Northeast. In 1959 Northeast led, but most of its 1960 gains were in first-class commuter traffic.

The leader in coach passenger-miles was United, with more than 2.8 billion. UAL's low-fare traffic increased by 658 million passenger-miles, or 29.9%, over 1959. TWA was first in 1959, but showed only a 5.4% increase last year.

Although coach was less than half its total traffic (44.74%), American was in second place in coach passenger-miles, with 2,799,157,000. In 1959 only 37.09% of AA's customers rode in the low-fare seats, but last year the company's coach gain was 716 million passenger-miles, or a total of 34.4%.

The lone trunk to show a coach decrease was Eastern, whose traffic totals were adversely affected by two strikes.

In the six years from 1955 through 1960, the industry increased its percentage of coach seating by 14.3 percentage points. Exceeding the average growth were UAL, AA, Delta, NWA, CAL and Braniff. TWA and NAL topped 50% coach for all six years. ■

HOW AIRLINES RANK IN COACH TRAFFIC, 1960 vs. 1959

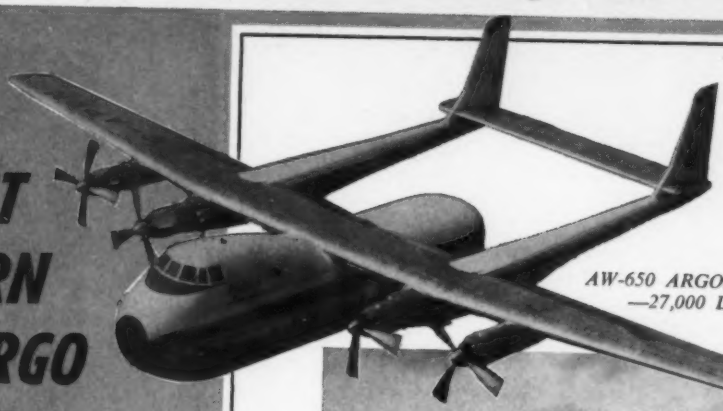
	1960 Revenue Passenger Miles (000)			1959 Revenue Passenger Miles (000)		
	Coach	Total	% Coach	Coach	Total	% Coach
United	2,862,695	5,354,955	53.46	2,204,242	4,827,345	45.66
American	2,799,167	6,257,252	44.74	2,082,311	5,614,425	37.09
TWA	2,570,581	4,450,933	57.75	2,437,057	4,579,229	53.22
Eastern	2,156,998	4,045,679	53.32	2,206,040	4,431,554	49.78
Delta	804,400	1,832,106	43.91	660,505	1,556,137	42.44
Northwest	777,882	1,336,636	58.19	766,873	1,384,253	55.40
National	597,041	1,016,138	58.76	582,953	1,100,933	52.95
Western	421,610	944,233	44.65	353,366	896,065	39.44
Continental	405,879	885,490	45.84	230,637	672,495	34.30
Capital	350,541	1,492,332	23.49	297,769	1,611,177	18.48
Braniff	348,474	1,052,502	33.11	163,824	934,554	17.53
Northeast	291,938	564,943	51.68	288,272	519,049	55.54
Totals	14,387,206	29,233,199	49.22	12,273,848	28,127,216	43.64

SIX-YEAR COACH ANALYSIS

	1955	1956	1957	1958	1959	1960
United	30.64	34.75	35.52	41.30	45.66	53.46
American	27.08	29.37	30.54	34.44	37.09	44.74
TWA	51.85	56.82	55.00	52.21	53.22	57.75
Eastern	43.56	44.31	47.61	48.52	49.78	53.32
Delta	29.49	37.41	39.33	41.43	42.44	43.91
Northwest	35.87	38.44	43.49	48.57	55.40	58.19
National	56.40	55.18	52.65	55.62	52.95	58.76
Western	33.03	27.58	32.26	37.53	39.44	44.65
Continental	12.35	12.46	35.62	32.63	34.30	45.84
Capital	14.87	11.43	10.01	10.72	18.48	23.49
Braniff	6.59	12.28	12.23	17.00	17.53	33.11
Northeast	....	....	43.95	65.43	55.54	51.68
Totals	34.92	35.68	38.31	41.11	43.64	49.22

Source: AIRLIFT research.

THE LARGEST MODERN ALL CARGO FLEET



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—27,000 Lbs. Payload

DC-7CF—39,000 Lbs. Payload

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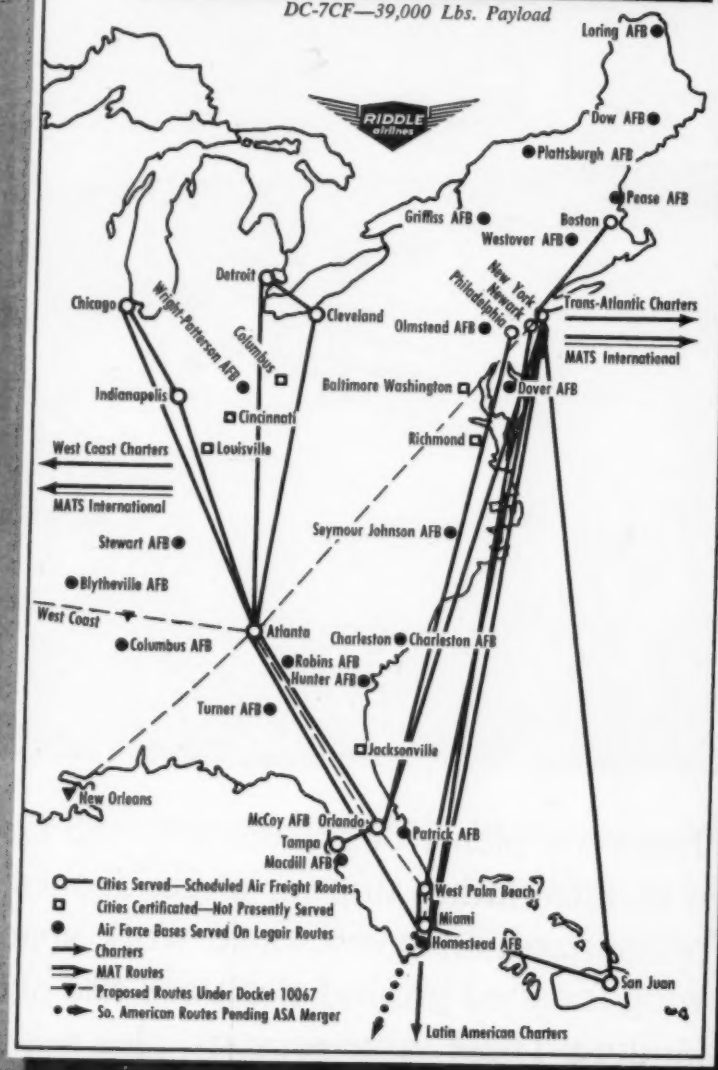

RIDDLE airlines inc.

FIELD OFFICES:

Atlanta	PO 6-2711	Orlando	GA 5-2696
Akron	EN 4270	Newark	MI 3-1166
Baltimore	WI 5-6020	Philadelphia	SA 6-9133
Boston	LO 7-1922	St. Petersburg	(Call Tampa)
Chicago	LU 2-4040	Stuart	933
Cleveland	CL 2-4270	Tampa	RE 6-1351
Detroit	CR 8-1300	Washington, D. C.	FE 3-8191
Fort Myers	ED 2-8061	West Palm Beach	OV 3-4771
Indianapolis	CH 1-8288		
Jacksonville	EV 9-8607		
Lakeland	MU 2-0380	In Puerto Rico:	
Los Angeles	OL 3-7624	Arecibo	178
Miami	TU 7-2651	San Juan	9-0360
Milwaukee	EN 8080	Ponce	2-4200
New York	OL 6-6400	Mayaguez	536

There are plenty of reasons why the Lockheed Hercules (GC-130) is an ideal father ship for target drones: speed, altitude, endurance; pressurized, air-conditioned work space for drone directors; high wing for good ground clearance and accessibility; short takeoff and landing. These same reasons, plus a lot of others, make the C-130 Hercules the free world's most versatile and useful cargo airplane.

The big propjet airlifter is now operating or being built in 12 different configurations. C-130s have flown more than a million miles since 1957—and they will fly millions more in years to come. Lockheed Aircraft Corporation, Marietta, Georgia.

LOCKHEED GEORGIA

Selected Airline Expenditures

Company	Total Assets 1960	Total Assets 1959	Shop and Servicing Supplies 1960	Shop and Servicing Supplies 1959	Passenger Food Expenses 1960	Passenger Food Expenses 1959	Advertising 1960	Advertising 1959
AAXICO	$ 4,029,542	$ 3,961,041	$ 6,181	.....	.....	.....	$ 543	$ 2,136
Aerovias Sud	962,156	839,971	15,578	$ 17,128	$ 22,520	.....	5,176	6,659
Alaska	6,380,523	5,561,165	53,824	47,642	190,319	$ 175,827	93,180	127,478
Alaska Coastal	1,257,545	1,307,708	17,430	34,674	22,520	.....	5,176	16,584
Allegheny	17,560,119	6,175,183	78,583	81,353	115,584	42,397	408,882	186,181
Aloha	7,488,250	5,233,016	3,221	4,626	1,992	112	134,532	94,700
American	513,705,187	499,597,065	2,560,888	2,731,601	16,172,412	14,632,714	6,821,109	7,552,721
Bonanza	8,546,489	7,161,526	27,586	16,196	45,262	29,786	286,089	248,344
Braniff	94,222,253	78,561,051	483,913	411,959	3,130,060	2,417,444	2,016,542	1,827,602
Capital	63,475,507	79,031,932	462,596	586,369	2,870,604	3,617,232	2,173,507	2,390,874
Caribbean Atlantic	1,670,742	1,513,824	16,054	19,640	2,288	2,005	84,534	47,075
Central	2,358,285	2,024,867	21,708	16,949	23,890	15,893	124,728	154,633
Chicago Helicopter	2,055,180	2,327,715	35,683	29,655	.....	.....	26,591	34,479
Continental	81,324,482	75,642,073	357,210	248,917	2,070,734	1,450,866	2,358,317	1,743,109
Cordova	513,585	422,978	7,331	8,095	4,807	5,167	8,370	7,654
Delta	135,006,736	114,088,700	1,515,762	937,012	4,185,944	3,384,087	3,461,771	3,356,358
Eastern	344,616,231	312,408,900	1,945,370	2,020,297	9,274,159	9,268,217	6,048,070	6,108,092
Ellis	1,065,300	1,204,688	6,203	5,191	.....	.....	20,710	27,757
Flying Tigers	37,579,962	41,605,647	86,488	92,717	152,370	207,316	149,405	139,380
Frontier	6,607,022	7,681,742	74,578	64,565	118,602	78,758	261,937	263,620
Hawaiian*	7,619,961	6,907,947	44,394	34,888	88,476	38,364	152,456	167,450
Lake Central	3,874,838	1,720,151	834	556	16,091	15,345	42,821	48,185
Los Angeles	1,687,453	1,068,230	10,969	9,500	.....	.....	4,952	5,090
Mackey	2,173,939	2,031,733	20,827	22,927	11,765	9,036	60,964	68,325
Mohawk	12,035,704	10,990,439	147,200	126,671	97,278	81,926	296,238	185,030
National	94,620,235	92,485,983	538,240	526,085	2,255,954	2,206,578	2,195,975	2,549,620
New York Airways	3,632,131	4,143,952	22,424	21,577	.....	.....	17,367	14,109
North Central	9,745,199	9,149,603	141,643	123,591	174,786	163,327	468,622	496,862
Northeast	38,068,937	35,568,859	278,226	230,366	1,174,499	795,207	1,280,539	1,529,244
Northern Consolidated	1,010,343	3,938,176	17,027	13,164	16,615	20,151	49,103	44,067
Northwest	152,382,051	130,072,987	614,306	884,880	3,852,648	3,723,530	3,391,257	3,637,293
Ozark	5,915,506	6,210,791	98,816	89,960	57,209	48,899	184,991	174,710
Pacific	10,567,006	9,171,791	71,470	55,008	117,964	74,967	255,207	275,114
Pacific Northern	6,211,000	7,246,734	91,800	81,485	299,800	300,195	150,600	135,008
Pan American	615,323,297	494,167,466	.....	1,863197	8,086,488	8,306,702	12,336,930	11,481,816
Alaska	.....	.....	.....	40,272	.....	116,629	.....	110,867
Atlantic	.....	.....	.....	828,913	.....	3,390,738	.....	5,413,511
Latin American	.....	.....	.....	437,483	.....	2,952,431	3,629,360	3,264,177
Pacific	.....	.....	.....	556,529	.....	1,846,908	2,793,677	2,693,261
Panagra	37,414,489	32,077,735	45,327	47,460	558,407	422,662	1,282,777	1,105,395
Piedmont	10,503,973	10,511,113	52,462	56,757	112,587	95,910	119,414	284,701
Reeve	1,848,778	1,949,967	31,767	4,633*	39,788	36,984*	.....	5,128*
Resort	3,144,169	3,927,476	22	.....	.....	12,713	.....	.....
Riddle	10,450,651	3,789,435	36,345	41,258	10,429	.....	41,409	24,876
Seaboard & Western	17,050,707	10,594,563*	79,034	77,551*	61,196	27,707*	65,324	58,857*
Slick	17,663,810	13,909,436	61,997	52,995	105,946	213,040	.....	.....
Southern	3,367,797	2,673,368	101,214	62,559	35,949	31,875	147,310	119,860
Trans Caribbean	8,851,953	8,698,656	23,493	4,433	58,107	55,299	231,217	179,380
Trans Texas	4,114,311	3,181,085	17,556	17,300	49,095	43,776	341,483	311,894
TWA	456,721,925	282,102,655	1,784,591	2,033,343	9,251,197	8,764,236	7,632,036	6,766,844
United	508,811,950	294,588,557	2,809,563	2,611,428	11,913,833	10,015,593	7,243,947	5,513,683
Western	71,650,779	66,220,020	296,223	291,803	2,382,038	2,330,939	2,198,941	1,994,997
West Coast	8,427,101	7,410,611	39,305	47,472	177,416	88,833	214,573	216,571
Wien Alaska	3,167,631	3,211,882	19,491	27,219	34,251	47,573	18,692	13,270
TOTALS	$3,458,482,726	$2,894,272,213	$15,272,753	$16,836,652	$79,443,879	$73,299,188	$64,914,314	$61,742,815

* Data as of Sept. 30, 1960. Pan American employment includes 2,906 non-divisional employes with $16,680,418 payroll and $5,740 average wage.

Assets Pass $3 Billion in '60

Employment reaches 166,000, payroll climbs $40 million and average wage approaches $7000

THE U.S. AIRLINES during 1960 moved through the $3-billion mark in total assets in a year that saw first signs of a hold-the-line trend in a number of cost areas.

One of these, however, was not wages. Although employment edged up only slightly from 165,832 in 1959 to 166,248 in 1960, the airlines' annual payroll increased $40 million to raise the average wage from $6365 to $6847. Significant drops by both AAXICO and Resort to staffs of eight and eleven employes respectively tended to obscure the trend both in employment and wages from 1959 to 1960.

for 1959 and 1960

Other Promotional Publicity Expenses 1960	Other Promotional Publicity Expenses 1959	Employment 1960	Employment 1959	Annual Payroll 1960	Annual Payroll 1959	Average Wage 1960	Average Wage 1959	Company
.....	$ 12,634	8	263*	$ 119,520	$ 2,090,921*	$ 14,990	$ 7,950*	AAXICO
$ 1,448	565	163	151	1,035,880	722,240	6,355	4,783	Aerovias Sud
53,429	30,623	437	431	3,469,438	3,225,630	7,939	7,484	Alaska
1,448	769	139	150	1,120,627	1,222,000	8,062	8,149	Alaska Coastal
601	23,197	1,172	948	7,269,661	5,577,759	6,203	6,287	Allegheny
7,625	24,959	406	333	2,498,000	2,071,628	5,600	6,221	Aloha
523,493	645,278	23,826	23,747	166,193,087	163,858,134	6,975	6,900	American
8,023	3,523	495	474	3,321,405	3,031,650	6,710	6,396	Bonanza
61,558	27,492	5,288	5,382	35,952,958	33,238,920	6,799	6,178	Braniff
27,800	29,300	7,248	7,838	48,317,036	49,709,836	6,666	6,342	Capital
1,360	1,657	363	368	1,625,409	1,489,286	4,478	4,047	Caribbean Atlantic
10,297	9,215	514	489	3,068,688	2,794,023	5,970	5,714	Central
6,875	4,787	209	180	1,393,996	1,016,686	6,670	5,648	Chicago Helicopter
27,972	19,820	2,838	2,511	18,460,403	16,305,304	6,505	6,493	Continental
857	255	54	60	433,028	475,481	8,019	7,925	Cordova
79,968	57,179	7,651	7,371	49,655,303	45,386,321	6,490	6,157	Delta
274,136	246,360	17,311	17,764	117,540,590	103,947,383	6,790	5,852	Eastern
1,818	273	118	115	808,177	748,939	6,849	6,513	Ellis
130,546	100,593	985	1,384	8,446,464	9,029,758	8,575	6,524	Flying Tigers
15,421	12,825	1,095	1,132	6,879,571	6,719,065	6,283	5,772	Frontier
37,817	31,870	791	752	5,182,789	4,750,044	6,552	6,317	Hawaiian*
160	1,866	602	488	3,496,925	2,550,451	5,809	5,605	Lake Central
.....	.....	133	126	826,881	732,000	6,217	5,809	Los Angeles
6,483	10,330	121	134	531,084	589,450	4,389	4,398	Mackey
16,000	13,613	999	945	6,344,108	4,665,000	6,353	5,560	Mohawk
29,586	281,742	3,871	4,529	24,736,151	25,436,587	6,390	5,616	National
291	1,218	233	212	1,677,642	1,514,844	7,200	7,145	New York Airways
16,630	18,928	2,152	1,897	11,522,475	9,678,116	5,354	5,761	North Central
28,094	15,585	2,764	2,553	17,552,745	15,463,760	6,350	6,057	Northeast
995	128	168	152	1,343,274	1,177,176	7,995	7,745	Northern Consolidated
80,288	84,654	5,110	7,257	35,288,826	47,205,814	6,906	6,506	Northwest
11,922	8,505	1,049	1,104	6,538,059	5,300,000	5,858	4,800	Ozark
2,246	.....	772	668	5,370,948	3,542,562	6,957	5,303	Pacific
17,700	2,245	615	612	4,710,000	4,390,392	7,650	7,174	Pacific Northern
574,013	598,345	23,240	22,121	149,791,073	136,793,925	6,450	6,183	Pan American
.....	7,349	167	157	1,672,833	1,367,485	10,017	8,710	Alaska
.....	417,550	9,432	6,990	61,623,990	42,387,539	6,530	6,064	Atlantic
86,104	95,079	6,930	7,088	41,104,140	41,290,908	5,940	5,825	Latin American
157,315	78,367	3,805	5,384	28,709,692	38,163,373	7,540	7,088	Pacific
85,327	96,102	1,213	1,338	4,560,413	4,657,740	3,760	3,481	Panagra
1,362	9,551	1,029	992	5,821,403	5,711,836	5,657	5,758	Piedmont
6,015	1,231*	103	86*	880,044	749,228*	8,544	8,712*	Reeve
.....	19,098	11	103	69,300	1,006,619	6,300	9,773	Resort
361	92	600	394	3,350,812	3,573,515	6,937	6,859	Riddle
13,056	13,604*	910	949*	6,440,450	5,973,931*	7,075	6,295	Seaboard & Western
.....	.....	176	294	1,467,186	2,663,164	8,336	9,058	Slick
4,539	8,685	937	656	5,300,896	3,652,796	5,657	5,663	Southern
19,947	36,916	254	209	1,535,280	1,195,300	6,050	5,719	Trans Caribbean
7,937	10,135	776	799	4,666,313	4,146,416	6,013	5,887	Trans Texas
458,348	325,285	20,335	19,909	139,550,186	132,707,710	6,863	6,666	TWA
312,361	334,092	23,214	21,439	162,830,343	150,282,502	7,014	7,010	United
104,150	127,352	2,730	2,962	.....	17,704,404	.....	6,428	Western
578	96	780	849	4,804,752	3,122,209	6,150	3,677	West Coast
6,871	2,157	240	252	2,198,446	2,063,992	9,160	8,190	Wien Alaska
$ 3,077,752	$ 3,304,729	166,248	165,832	$1,095,998,045	$1,055,662,447	$ 6,847	$ 6,365	TOTALS

In other cost areas, spending for shop and servicing supplies edged upward slightly from $14.9 million (discounting Pan American) to $15.2 million. Passenger food costs rose 8.2% from $73.2 million in '59 to $79.4 million in '60.

Biggest percentage increases here were those of Northeast (50%) and Continental (42%), both the result of sharp increases in traffic. American and United ran about 10%, TWA 5.5% and both Eastern and National held at 1959 levels.

The biggest drop in food spending took place at Capital where $747,000 was shaved from the 1959 figure of $3.6 million. This represented a 26% cut and brought costs from about 87¢ per passenger in '59 to about 79¢ last year.

Among the "big four," average food costs shaped up as follows: American spent $16.17 million for 8.6 million passengers or $1.88 per passenger; Eastern spent $9.27 million on 8.99 million passengers or an average of $1.03 per passenger; TWA costs were $9.25 million for 5.8 million passengers or $1.59 per passenger, and United spent $11.9 million on 8.1 million passengers or an average of $1.46 per passenger.

These, however, are broad averages and should be compared only after due consideration for varying percentages of people served meals, the ratio of longhaul to shorthaul operations and the like. However, in view of the high percentage of passengers not given meal service, they give a good clue to the much higher unit expenditures for passengers actually served meals.

In advertising, the 1960 results show a 5.2% rise for the overall U.S. airline industry with a considerable fluctuation from airline to airline. On the plus side, Continental was up 35%, United 31%, TWA 12%, Western and Braniff 10%, Pan American 5% and Delta 3%. Eastern held about even, with perhaps a 1% decline.

American, Capital and National, however, showed major drops. National was down about 14% and both AA and CAP about 10%. Northwest declined 5%, but this probably was attributable to a last quarter reduction of services due to labor difficulties.

The two largest percentage increases were recorded by locals. Allegheny was up 119% and Mohawk 60% over 1959 spending for advertising. ■

Jet Costs Drop in '60; CAL Has Lowest Costs

Continental Air Lines, with a phenomenal average utilization of 10:35 hrs. for its 707s during 1960, led the U.S. trunk airlines in low-cost operation at $1.53 per revenue mile. Closest to CAL were American at $1.73 and TWA at $1.76.

During the year most trunks showed significant declines in costs. Continental's costs the previous year were $1.68, American's $1.91 and TWA's $2.17.

In average speeds, TWA topped the 707 carriers with 504 mph for its -331 Intercontinentals used in transcontinental nonstop service. It also had the highest average stage length, however, at 1873 miles.

In DC-8 operations, National was low cost operator with costs of $1.98 per revenue mile. United was a close second at $2.02. In speed, the highest average for DC-8s was Northwest's 488 mph over an average 1550 mile stage. National averaged 480 and United 467 mph for the year.

In the first sizeable set of statistics on the Convair 880, Delta's year-end results show an average cost of $1.89 per revenue mile and an average flight speed of 470 mph for a "short" 764-mile segment. This worked out to exactly 2 mph higher than Braniff's experience for the same stage length in its operation of the JT4-powered 707-220. American's Boeing 720 averaged 472 mph, but this was for an average stage length of 921 miles.

1960 JET OPERATING COSTS AND STATISTICS

Costs in cents per revenue mile*

	DOUGLAS DC-8					CONVAIR 880		BOEING 707-720								
	DAL	EAL	NAL	NWA	UAL	DAL	NEA	AA 707-123	AA 720	BNF 707	CAL 707	NAL 707	NEA 707-320	TWA 707-131	TWA 707-320	UAL 707-720	WAL 707
Crew Salaries and Expenses	21.3¢	24.9¢	19.7¢	26.1¢	24.4¢	22.3¢	60.8¢	24.7¢	25.2¢	20.0¢	20.0¢	21.4¢	48.5¢	26.3¢	25.6¢	22.4¢	26.6¢
Fuel, Oil and Taxes	58.6	55.0	53.3	58.5	55.3	48.2	54.6	49.4	53.7	53.3	50.9	56.1	...	46.7	53.1	55.0	58.3
Insurance	19.5	22.2	19.7	48.3	12.5	21.3	15.1	8.0	11.9	24.2	13.2	18.6	33.5	8.2	11.8	10.9	24.1
Other	...	...	.8	.4	.3	...	...	.1	.2	.1	...	...	...	.2	.2	.7	...
Total Flying Operations	99.4	102.1	93.5	133.3	92.5	91.8	130.5	82.2	91.0	97.6	84.1	96.1	82.0	81.4	90.7	89.0	109.0
Labor	18.0	15.1	11.2	8.8	15.8	13.0	31.9	12.4	5.9	8.3	9.3	...	...	11.2	6.6	10.0	6.7
Materials & Outside Repairs	36.4	20.2	16.1	39.5	20.3	10.0	8.8	23.6	8.0	33.1	28.4	...	...	34.3	19.3	17.1	26.2
Reserves	...	...	10.3	...	...	5.5	27.1	...	...	11.9	(5.1)	...	...	1.3	9.4	...	18.8
Total Direct Maintenance	54.4	35.3	37.6	48.3	36.1	28.5	67.8	36.0	13.9	53.3	32.6	...	...	46.8	35.3	27.1	51.7
Maintenance Indirect	33.4	14.2	18.3	11.7	30.7	22.0	71.7	28.4	13.2	9.7	10.4	...	...	21.7	13.2	19.0	9.6
Total Maintenance	87.8	49.5	55.9	60.0	66.8	50.5	139.5	64.4	27.1	63.0	43.0	...	...	68.5	48.5	46.1	61.3
Depreciation—Aircraft	30.0	34.0	27.2	124.6	28.3	26.9	...	19.5	17.8	30.1	18.4	...	...	2.5	26.8	34.2	...
Engines	20.3	10.1	17.3	35.8	11.4	12.5	...	3.3	...	8.8	4.0	...	...	5.3	14.1	13.0	...
Parts & Other	6.5	14.1	5.0	33.2	3.1	6.3	...	3.6	5.5	5.0	3.3	...	...	5.2	5.9	3.1	15.5
Total Depreciation	56.8	58.2	49.5	193.6	42.8	45.7	...	26.4	23.3	43.9	25.7	...	...	13.0	46.8	50.3	15.5
Aircraft & Engine Rentals	...	...	...	...	...	1.0	52.9	...	13.8	...	.1	212.0	315.4	55.3	...	...	92.4
Total Aircraft Operating Exp.	244.0¢	209.8¢	198.8¢	386.9¢	202.1¢	189.0¢	322.9¢	173.0¢	155.1¢	204.5¢	153.0¢	308.1¢	397.4¢	218.2¢	186.0¢	185.4¢	278.3¢
Hours Flown—Revenue	12,513	12,129	3,808	283	58,003	6,558	202	72,230	7,192	6,681	18,272	2,538	1,784	47,800	7,527	8,540	2,968
Training	376	2,116	350	683	3,056	1,003	116	2,897	450	417	379	2	...	550	1,042	2,411	299
Other	99	235	32	16	903	118	...	464	72	61	49	4	...	264	36	262	31
Total Hours Flown	12,988	14,580	4,188	982	61,962	7,679	318	75,591	7,714	7,159	18,702	2,544	1,784	48,614	8,605	11,213	3,298
Revenue Utilization	7:14	5:47	6:31	2:34	7:34	5:54	2:58	8:22	7:03	7:04	10:35	7:02	8:58	8:44	7:42	5:00	6:56
Average Fleet Size	5.4	5.7	1.3	.3	21.4	3.0	.2	23.9	2.8	2.7	4.8	1.0	.5	15.0	2.7	4.7	1.2
Revenue Aircraft Miles	5,407	5,678	1,829	138	27,067	3,078	84	34,547	3,390	3,124	8,623	1,161	827	22,651	3,791	3,788	1,238
Passenger Load Factor—First Class	72.4%	68.5%	65.2%	58.4%	64.5%	62.2%	38.1%	64.9%	68.4%	69.9%	48.0%	73.3%	53.7%	59.7%	57.7%	70.4%	63.1%
Passenger Load Factor—Coach	69.7	66.8	71.5	63.7	79.3	54.3	54.3	75.5	79.5	70.1	54.0	82.7	70.3	76.2	68.5	80.0	74.3
Average Seats Per Mile	117.0	115.0	126.7	120.0	110.0	80.7	97.2	119.3	99.3	106.0	115.0	122.5	136.0	113.0	120.3	103.3	112.7
Average Passengers Per Mile	82.5	77.5	94.5	74.3	80.2	49.3	43.3	85.1	74.0	74.0	59.7	99.2	90.3	78.5	77.9	78.4	79.0
Cost Per Seat Mile	2.09¢	1.82¢	1.57¢	3.22¢	1.84¢	2.34¢	3.32¢	1.45¢	1.56¢	1.93¢	1.33¢	2.51¢	2.92¢	1.93¢	1.54¢	1.79¢	2.43¢
Cost Per Passenger Mile	2.96	2.71	2.11	5.21	2.52	3.84	7.46	2.03	2.09	2.75	2.57	3.11	4.40	2.78	2.39	2.36	3.52
Average Flight Length—Miles	876	877	1,076	1,550	1,231	764	875	1,695	921	764	1,160	973	1,089	1,528	1,873	595	592
Average Speed—Airborne—M.P.H.	416	467	480	488	467	470	417	479	472	468	472	458	463	473	504	443	417
Average Speed—Block-to-Block	379	412	426	436	423	402	370	444	417	416	444	411	403	443	462	383	377
Fuel Consumed—Gals. Per Hour	2,310	2,480	2,750	2,608	2,382	2,160	...	2,281	2,180	2,686	2,190	2,540	...	2,201	2,445	2,305	2,290
Oil Consumed—Gals. Per Hour	...	...	.21	.71	.43	...	...	.37	.22	...	...	.10	...	.40	.29	.13	...

*Domestic operations only. Source: AIRLIFT research, from CAB reports.

Speed Limit Hit Electra Costs in '60

The full impact of the slowdown of the Lockheed Electra on airline operating costs hit during 1960 as direct costs per revenue mile jumped anywhere from 23 to 58%. Normal increases for other turboprops varied from 4% to 7% during the year, with some showing declines.

Of the six Electra carriers, only Eastern and Western were successful in holding their cost increases in the neighborhood of 30¢ per plane-mile.

In average flight speeds, American dropped from 334 mph in 1959 to 291, Braniff from 336 to 292 and Eastern from 330 to 282. Northwest, which had the highest Electra average in '59 at 348 mph, dipped to 313 in 1960.

Although Allegheny Airlines' cost figures were not available at presstime, its Convair 540 showed a 241 mph average flight speed in its first full-scale service with a local airline.

Viscount operating costs for three carriers varied from a low of about $1 per revenue mile for Continental to $1.24 for Northeast.

Bonanza led the local airlines in Fairchild F-27 cost performance with an 88.5¢ per revenue mile average for the year. West Coast's costs were 96.2¢ while Ozark, Pacific and Piedmont all exceeded $1 per mile.

Average flight speeds for the F-27 varied from 191 mph for Piedmont to 211 mph for Bonanza.

1960 TURBOPROP OPERATING COSTS AND STATISTICS

Costs in cents per revenue mile*

	LOCKHEED ELECTRA						VISCOUNT			540	FAIRCHILD F-27				
	AA	BNF	EAL	NWA	NAL	WAL	CAP	CAL	NEA	AAA	BAL	OZA	PAC	PAI	WCA
Crew Salaries and Expenses	34.1¢	27.6¢	33.4¢	29.8¢	28.1¢	24.6¢	24.5¢	21.7¢	22.2¢		20.1¢	21.8¢	21.8¢	25.5¢	22.4¢
Fuel, Oil and Taxes	25.0	23.6	26.1	26.2	25.5	23.9	22.6	22.9	24.5	N.A.	16.2	16.9	15.5	17.8	18.6
Insurance	3.6	7.4	6.4	8.0	9.4	7.0	2.8	3.2	6.0		6.1	7.4	7.1	6.2	5.0
Other	.2	.2	...	.3	...	...	...	...	...		.1	...	.9	...	...
Total Flying Operations	62.9	58.8	65.9	64.3	63.0	55.5	49.9	47.8	52.7		42.5	46.1	45.3	49.5	46.0
Labor	10.3	13.1	11.8	11.6	8.2	4.6	10.5	8.7	12.4	N.A.	7.5	15.3	8.6	9.3	9.0
Materials and Outside Repairs	51.1	48.7	26.5	29.7	38.8	43.4	11.1	13.6	14.6		16.4	16.0	26.3	19.8	17.0
Reserves	...	(2.3)	(2.0)	...	2.6	5.8	...	1.0	2.7		4.3	7.8	3.1	7.6	7.0
Total Direct Maintenance	61.4	59.5	36.3	41.3	49.6	53.8	21.6	23.3	29.7		28.2	39.1	38.0	36.7	33.0
Maintenance, Indirect	23.7	15.6	11.6	15.8	13.5	8.7	13.2	9.4	15.9		6.8	7.4	15.2	10.2	8.4
Total Maintenance	85.1	75.1	47.9	57.1	63.1	62.5	34.8	32.7	45.6		35.0	46.5	53.2	46.9	41.4
Depreciation—															
Aircraft	30.3	25.7	25.8	20.8	30.0	24.4	13.8	12.0	14.6	N.A.	6.5	7.3	9.4	7.7	5.2
Engines	...	6.9	9.3	5.7	7.9	...	3.1	4.2	7.3		2.6	2.8	3.2	2.3	1.7
Parts and Other	4.9	5.9	12.6	6.3	6.2	3.8	3.1	4.1	4.6		1.9	3.3	2.4	3.0	1.9
Total Depreciation	35.2	38.5	47.7	32.8	44.1	28.2	20.0	20.3	26.5		11.0	13.4	15.0	13.0	8.8
Aircraft and Engine Rentals	22.8	...	...	...	...	17.0	...	...	...		...	...	...	...	...
Total Aircraft Operating Expenses	206.0¢	172.4¢	161.5¢	154.2¢	170.3¢	163.2¢	104.7¢	100.8¢	124.9¢		88.5¢	106.2¢	113.6¢	109.6¢	96.2¢
Hours Flown—															
Revenue	71,788	14,673	98,291	25,416	28,132	16,234	181,763	36,605	25,588	2,996	17,094	6,584	12,581	17,319	16,485
Training	1,434	229	2,043	544	363	426	1,498	472	491	385	426	109	348	152	235
Other	624	296	1,304	231	101	179	1,264	169	109	108	171	43	177	213	256
Total Hours Flown	73,836	15,199	101,638	26,191	28,596	16,839	184,525	37,246	26,188	3,489	17,691	6,736	13,106	17,684	16,974
Revenue Utilization	6:12	5:07	6:49	7:32	6:24	5.8	8:55	7:08	6:59	4:38	6:32	6:01	5:44	6:00	7:30
Average Fleet Size	31.8	7.9	39.5	9.2	12.0	5,017	55.8	14.3	10 0	1.8	7.2	3.0	6.0	8.0	6.0
Revenue Aircraft Miles	20,878	4,286	27,726	7,960	7,997	7:38	44,077	9,626	5,738	723	3,608	1,278	2,542	3,305	3,210
Passenger Load Factor—First Class	58.6%	50.7%	49.6%	49.2%	46.5%	57.3%	56.8%	47.3%	64.8%	44.3%	41.1%	43.8%	54.2%	46.2%	49.8%
Passenger Load Factor—Coach	46.8	57.8	57.6	64.4	62.5	75.4	51.7	49.2	41.0	...	...	...	48.8	...	...
Average Seats Per Mile	68.0	72.4	69.4	77.2	76.3	67.8	44.8	52.1	44.0	47.2	37.9	39.5	36.0	35.8	38.0
Average Passengers Per Mile	39.9	37.9	35.8	44.9	38.3	40.7	25.2	24.7	28.1	21.1	15.6	17.3	18.8	16.5	18.9
Cost Per Seat Mile	3.03¢	2.38¢	2.33¢	2.00¢	2.23¢	2 41¢	2.34¢	1.94¢	2.84¢	...	2.33¢	2.69¢	3.15¢	30.7¢	2.53¢
Cost Per Passenger Mile	5.17	4.55	4.52	3.44	4.45	4 02	4.16	4.08	4 45	...	5.68	6.14	6.05	6.65	5.09
Average Flight Length—Miles	455	348	382	478	366	552	310	222	234	221	144	112	130	82	119
Average Speed—Airborne—mph	291	292	282	313	284	309	243	262	224	241	211	194	202	191	195
Average Speed—Block-to-Block	257	261	243	285	250	261	214	232	191	205	187	162	177	161	167
Fuel Consumed—Gals. Per Hour	678	703	698	674	690	647	463	513	490	386	251	261	265	264	255
Oil Consumed—Gals. Per Hour	.56	...	.27	.45	.43	...	.11	...	...	.20	.07	...	.09	.09	.07

* Domestic operations only. Source: AIRLIFT research, from CAB reports.

Total—All U.S. Airlines

Type	Air Carriers*							
	Total		Scheduled		Supplemental		Intrastate and Contract	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Turbojet, 4-eng.	84	202	84	202	0	0	0	0
Turboprop, 4-eng. ...	181	184	178	181	0	0	3	3
Turboprop, 2-eng. ...	35	46	35	46	0	0	0	0
Piston, 4-eng.	969	893	869	777	49	85	51	31
Piston, 2-eng.	826	780	681	631	103	78	42	71
Piston, 1-eng.	17	5	17	5	0	0	0	0
Helicopters	23	25	23	25	0	0	0	0
Total	2,135	2,135	1,887	1,867	152	163	96	105

* Figures for 1960.

Scheduled Air Carrier Industry

AIRCRAFT MANUFACTURER AND MODEL*

Scheduled Air Carriers	Boeing			Convair					C-W		Douglas							Fair-child		Lockheed				Martin		Vick-ers		
	707	720	377	540	440	340	240	880	C-46 201	DC-8	DC-7C	DC-7 DC-7B	DC-6B	DC-4A	DC-6	DC-4	DC-3A DC-3	F-27	1649A	1049H	1049C 1049G	749 049	188	404	202	745 810	Other	Total
Aaxico	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Aerovias Sud	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	5
Alaska	..	..	..	..	..	..	..	..	2	..	..	..	..	3	..	2	..	..	..	..	..	..	..	..	..	..	2	9
Alaska Coastal	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	13
Allegheny	..	..	..	4	..	9	..	..	..	..	..	..	..	..	..	..	9	..	..	..	..	..	..	..	12	..	..	34
Aloha	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	6	..	..	..	..	..	..	..	..	..	9
American	24	9	..	..	..	..	37	..	..	..	..	33	17	..	43	..	..	..	..	..	..	..	33	..	..	..	..	196
Avalon	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bonanza	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	8	..	..	..	..	..	..	..	..	..	9
Braniff	4	..	..	..	..	31	..	..	2	..	5	..	..	..	11	..	1	..	..	..	..	..	8	..	..	..	..	62
Capital	..	..	..	..	..	..	..	..	..	..	..	..	11	..	..	10	10	..	..	..	..	..	..	..	..	51	..	82
Carib-Atlantic	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	7	..	..	..	..	..	..	..	..	..	..	7
Central	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	..	..	..	..	..	..	..	..	..	..	15
Continental	5	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	8	..	..	..	..	..	..	..	..	13	..	31
Cordova	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	3
Delta	..	..	..	..	..	26	..	9	5	6	..	20	..	..	11	..	10	..	.	..	..	..	..	..	..	..	..	87
Eastern	..	..	..	..	20	..	..	..	..	11	..	48	7	..	..	.	..	..	..	..	38	1	39	52	..	..	9	216
Ellis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	9
Flying Tiger	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	12	..	..	..	..	..	..	..	14
Frontier	..	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	25	..	..	..	..	..	..	..	..	..	..	30
Hawaiian	.	..	..	..	..	8	..	..	..	..	..	..	..	2	2	..	6	..	.	..	..	..	..	..	..	..	..	18
Lake Central	.	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	12	..	.	..	..	..	..	..	..	..	..	12
Mackey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	2	..	..	..	..	..	..	..	..	..	..	6
Mohawk	..	..	..	..	5	..	10	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	22
National	..	..	..	..	6	..	..	..	..	3	..	8	8	..	4	..	..	..	..	4	..	..	12	..	..	..	..	45
North Central	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	32	..	..	..	..	..	..	..	..	..	..	40
Northeast	.	..	..	..	..	..	..	4	..	..	..	..	10	..	..	..	6	..	..	..	..	..	..	..	..	10	..	30
No. Consol.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	3
Northwest	..	..	..	..	..	..	..	..	..	4	15	..	22	..	..	8	..	..	..	..	..	..	9	..	..	..	..	58
Ozark	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	3	..	..	..	..	..	..	..	..	..	27
Pacific	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	6	..	..	..	..	..	8	3	..	..	24
Pacific No.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	6	..	..	..	..	..	9
Panagra	..	..	..	..	..	..	..	..	..	3	..	6	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
PAA	29	..	3	..	..	..	..	..	..	16	24	7	29	..	..	18	..	..	..	..	..	..	..	..	..	..	..	126
Piedmont	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	8	..	..	..	..	..	..	..	..	..	25
Reeve Aleutian	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	5
Resort	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Riddle	..	..	..	..	..	..	..	..	22	..	1	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	26
Samoan	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
S/W	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	3	1	..	..	9	..	..	..	..	..	..	..	14
Slick	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Southern	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	26	..	..	..	..	..	..	..	..	..	..	26
South Pacific	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Tr. Corp. of Amer.	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	..	..	..	..	..	..	..	..	..	5
Trans Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	..	..	..	..	..	..	..	..	..	..	25
TWA	27	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	25	8	32	68	..	20	..	..	..	181
United	..	13	..	..	..	30	..	..	..	32	..	45	41	7	38	..	..	..	..	..	..	..	..	..	..	..	..	206
West Coast	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14	6	..	..	..	..	..	..	..	..	..	20
Western	2	..	..	..	..	..	4	..	..	..	..	..	27	..	..	..	..	..	..	..	..	..	6	..	..	..	..	39
Wien Alaska	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	7
TOTAL	91	22	3	4	31	117	51	14	42	75	45	172	178	13	110	52	276	42	25	33	71	75	107	80	15	74	24	1,842

* As of Dec. 31, 1960.

U.S. Airline Transports—1960

The changing face of the U. S. airline industry is highlighted in the dramatic shift in the strength of airline fleets within the short span of 12 months.

On January 1, 1960 the carriers had 84 four-engine jets. By December 31 they had 202, a 142% rise. During this same span the scheduled carriers retired 92 four-engine piston types and 50 twin-engine models, but these represented less than 10% of the 1550 they had on their books as the year began.

Supplemental airlines showed increasing activity toward acquisition of the newly retired four-engine equipment. During 1960, they expanded from 49 to 85 in fleet strength, a healthy 73.4% jump. They also chopped their fleets of twin-engine models, mostly C-46s, by some 25 aircraft.

The net result for all U. S. airlines was a standoff—2135 aircraft on January 1 and exactly the same total on December 31.

Intrastate & Contract Carriers

	C-46 20T	DC-4	DC-3 DC-3A	Other	Total
Admiral Air Service	..	..	3		3
Air O Fleet	..	..	1		1
American International	..	1	..		1
Avalon **	..	..	2	1-VS-44A	3
California Air Freight	1	..	..		1
California Overseas	..	..	..		..
Civil Air Transport	..	..	1		1
Congressional Flying Service	..	..	1		1
East Coast Flying Service	..	..	1	1-404	2
Edde Airlines	..	..	2		2
Executive Air-Transportation	..	..	2		2
Executive Business	3	..	..		3
Fairways Corporation	..	..	1	1-CV440	2
Farr Air Inc.	..	..	1		1
Fast-Way Air	..	..	1		1
Intercontinental U. S.	..	1	..		1
Interior Airways, Inc.	3	..	3		6
Las Vegas Hacienda	..	1	2	1-049	4
Lone Star	..	..	..		..
Mercer Eenterprises	..	..	1	1-DC-2	2
Northern Express	..	..	..	2-CV240	2
Pacific Southwest	..	3	..	1-DC-6B, 3-188	7
Purdue Aeronautics Corp.	..	..	..		5
Remmert-Werner Corp.	..	..	5		2
Seven Seas Airlines	..	4	2		4
Sky Van Airways	2	..	..		2
Slick Airways **	..	..	..	5-1049	5
South East Airlines	..	..	2	1-CV240	3
Southeast Aircraft Corp.	..	..	3		3
Trans Global	1	..	1		2
Trans-Sierra Airways	..	..	1		1
Trans-International	..	..	..	2-1049	2
Twentieth Century	..	1	..	1-DC-6B	2
U.S. Industries	..	..	2		2
Zantop Air Service	15	10	1		26
Total	25	21	39	20	105

* As of Dec. 31, 1960.
** Not operating under current scheduled certificate.

Supplemental Air Carriers *

	C-46 20T	DC-6/6A	DC-4	DC-3/A	Other	Total
American Flyers	..	..	..	4	4-749/049	8
Arctic Pacific	..	..	..	1		1
Argonaut	..	..	..	..		1
Assoc. Air Transport	1	..	2	..		5
Blatz Airlines	3	..	..	5		5
Calif. Hawaiian	..	..	2	..	2-1049	4
Capitol Airways	43	..	..	..	3-1049, 1-749/049	47
Central Air Transport	..	..	2	..		2
Coastal Airlines	..	..	..	..		..
Conner Airlines	..	..	..	..		..
Currey Air Transport	..	..	1	..	1-DC-6B	2
Great Lakes Airlines	..	..	..	..	2-DC-6B	2
Imperial Airlines	3	..	..	..	2-749/049	5
Johnson Flying Service	..	..	..	2		2
Los Angeles Air Station	..	..	..	..	1-DC-6B	1
Mantz Air Service	..	..	..	..		..
Meteor Air Transport	..	..	..	..		..
Miami Airlines	..	..	2	1	1-749/049	4
Modern Air Transport	4	..	..	..		4
Overseas National	..	4	..	..	12-DC-7B	16
President Airlines	..	..	2	..		2
Quaker City Airlines	..	..	..	..		..
Saturn	4	..	..	..		6
Sourdough Air Trans.	..	..	..	1		1
Southern Air Transport	3	3	..	..		6
Standard Airways	..	..	1	..	1-749/049	2
Stewart Air Service	..	..	1	4		5
Trans-Alaskan	..	1	2	..		3
Transocean Air Lines	..	..	..	..		..
U. S. Overseas Airlines	..	4	12	..		16
Universal Airlines	..	..	..	..		..
World Airways	..	4	8	..		12
World Wide Airlines	..	..	..	..	1-1049	1
Total	61	16	35	18	31	163

* As of Dec. 31, 1960.

Transport Helicopter Operators

Airline	HELICOPTERS						
	Bell	Sikorsky				Vertol	
	B47	S-42	S-58C	S-55	S-51	V44B	Total
Chicago Helicopter Airways	4	..	7	..	..	..	11
Los Angeles Airways	..	1	..	5	2	..	8
New York Airways	1	..	..	..	..	5	6
Total	5	1	7	5	2	5	25

New records, new routes for America's leading local airline

1960 was another record year for North Central The airline inaugurated its first international operations with two routes to Port Arthur/Fort William, Ontario, and completed arrangements for a third route to Regina, Saskatchewan, early in 1961 Added Cleveland and 15 Michigan cities (and now serves more cities in that state than any other airline) Became the first local airline to carry one million passengers in a single year Is now the second largest airline in the nation in number of cities served With this continuing program of expansion, North Central again ranks as America's leading local airline, first in passengers, air mail and cargo — with a network of more than 7,100 route miles covering 91 cities in 10 states and 2 Canadian provinces. North Central Airlines, 6201 34th Avenue South, Minneapolis 50, Minnesota.

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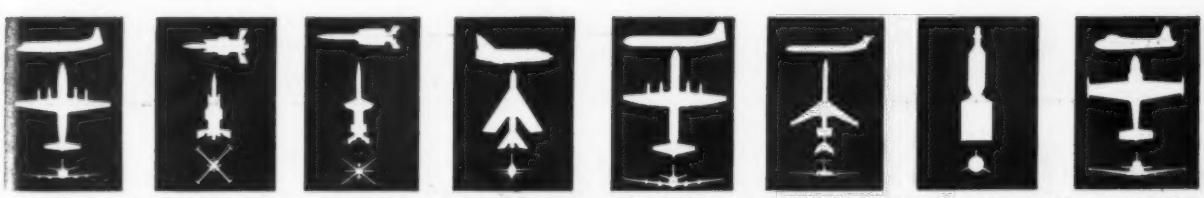

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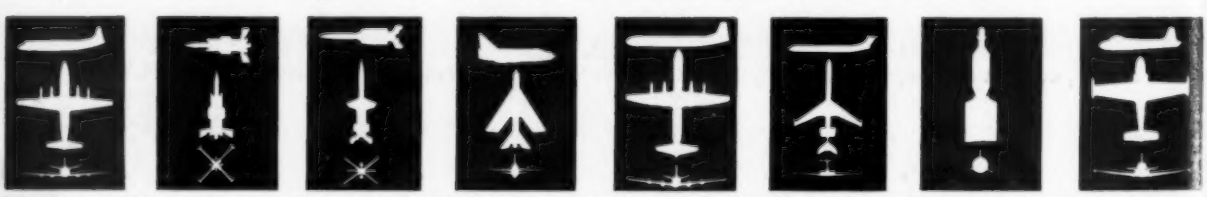
- The world's most economic transport—Vanguard.
- The first "second generation" rear-engined jets—VC-10—BAC-107.
- The Allied Nations' most lethal portable anti-tank weapon—Vigilant.
- The Royal Air Force's all-through jet trainer—Provost.

It has been entrusted by the British Government with:

- The project study for a Supersonic Airliner.
- The most advanced Tactical Strike Reconnaissance aircraft ever designed (TSR-2).
- The first all-steel research plane to pioneer the frontiers of supersonic knowledge (T-188).
- Many new weapon concepts which are still highly classified, including Blue Water, the support tactical surface-to-surface weapon for the British Army.

The four member companies of British Aircraft Corporation have, since World War II, built over 5,000 aircraft of all types. This number includes: 500 four-engined Turbine Airliners, 900 Twin- and Four-engined Jet Bombers, 1,700 Jet Fighters, and 1,100 Trainers.



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BRITISH AIRCRAFT CORPORATION

100 PALL MALL, LONDON, S. W. 1, ENGLAND

1960 Trunk Airline Statistics

As U. S. trunk airlines expand their fleets with new jets, a wide new variety of seating configurations, scheduling practices, service and overhaul concepts are making their way into being. Similarly, older piston types are being relegated to other roles.

To provide a single gathering place for the results of these innovations, AIRLIFT annually surveys these airlines and provides the sole source of these detailed statistics by type of equipment.

The numbers reported in these columns are not intended for direct comparison. Accounting practices, route operations, differing engines and gross weights, make direct comparison inadvisable.

The figures do, however, serve to highlight the many different concepts among airlines toward operation of the same basic types of airplanes and the results they attain from them from year to year, in utilization, operating costs, maintenance costs and average flight speeds.

AIRCRAFT SEATING

Airline	First-Class Domestic	First-Class Int'l	Coach/Economy Domestic	Coach/Economy Int'l	No. Fitted
JET AIRCRAFT					
BOEING 707/720					
AA (720)	42	...	62	...	10
707	46	...	74	...	24
BNF	50	50	56	56	4
CAL	40	...	74	...	5
TWA 131	46	...	71	...	15
331	48	28	74	102	12
UAL	40	...	59	...	13
WAL	42	...	71	...	2
Note: All above are mixed class. Add 1st-class & coach for total capacity.					
CONVAIR 880					
DAL	84	...	84	...	9
NEA	32	...	65	...	4*
Note: Delta uses same interior for all-first-class on all coach services. NEA uses mixed 97-pass. interior.					
DOUGLAS DC-8					
DAL	72	...	47	...	6*
EAL	40	40	81	81	11*
NAL	24	...	101	...	3*
NWA	5	...	...	...	...
UAL	44	24	65	95	31
Note: Eastern also offers 121-pass all-coach. *Mixed class interior.					
TURBOPROP AIRCRAFT					
LOCKHEED ELECTRA					
AA	72	...	...	...	33
EAL	70	70	70	70	39
NAL	42	80	38	...	12*
WAL	54	...	18	...	6*
Note: NAL was mixed-class 80 pass. domestic, 80-pass. 1st class int'l.					
VICKERS VISCOUNT					
CAP	46	...	46	...	51
CAL	52	...	...	...	13
NEA	44	...	...	...	10
Note: CAP uses same interior for all 1st-class, all coach service.					
PISTON AIRCRAFT					
CONVAIR 240					
AA	40	...	...	...	34
WAL	40	...	...	...	4
CONVAIR 340/440					
BNF	44	...	...	...	31
DAL	44	...	44	...	26
EAL	44	...	44	...	20
NAL	44	44	44	...	6
UAL	44	...	...	...	30
DOUGLAS DC-3					
CAP	24	...	...	...	10
CAL	25	...	...	...	9
MK	...	28	...	...	2
NEA	24	...	...	...	6
DOUGLAS DC-4					
CAP	55	...	...	...	10
MK	...	60	...	...	3
RID	...	...	...	72	1
DOUGLAS DC-6, 6B					
AA DC-6	...	...	80	80	16
DC-6	58	58	...	...	26
DC-6B	66	66	...	...	16
BNF DC-6	28	28	30	30	10*
LAP DC-6B	...	...	88	...	11
CAL -6B	58	...	...	...	1
DAL DC-6	...	76	76	76	7
DC-6	60	...	60	...	4
EAL DC-6B	...	...	102	102	7
MK DC-6	...	80	...	...	1
NAL DC-6	60	60	60	...	6
-6B	36	75	39	...	8
NEA DC-6B	74	...	76	...	10
UAL -6	50	...	72	...	50
-6B	58	...	76	...	58
WAL DC-6B	60	60	...	60	20
-6B	...	...	96	...	7
DOUGLAS DC-7, 7B, 7C					
AA DC-7	33	...	37	...	7*
DC-7	...	...	91	91	4
DC-7	63	...	...	...	9
BNF DC-7C	32	34	32	34	6*
CAL DC-7B	72	...	...	...	2
-7B	...	...	85	...	2
-7B	36	...	38	...	1*
DAL -7/7B	61	61	10	10	14*
-7/7B	23	23	62	62	6*
EAL -7B	68	68	68	68	19
-7B	24	24	48	48	10*
-7B	...	...	74	74	10*
NAL -7B	35	79	44	...	8*
UAL -7	58	...	86	...	39
LOCKHEED 049/749					
EAL 749	60	60	60	60	15
TWA 049	...	...	81	...	29
749	55	...	...	...	27
LOCKHEED 1049/1649					
EAL 1049	...	...	88	88	12
1049C	...	...	95	95	11
NAL 1049H	107	107	107	107	3
S&W 1049H	...	...	...	97	3
SLI 1049H	...	...	...	99	3
TWA 1049G	32	...	39	...	25*
1649A	31	14	40	60	26*
MARTIN 4-0-4					
EAL	40	...	40	...	55
TWA	40	...	...	...	16

*Indicates mixed-class interior; add 1st-class and coach to determine full capacity.

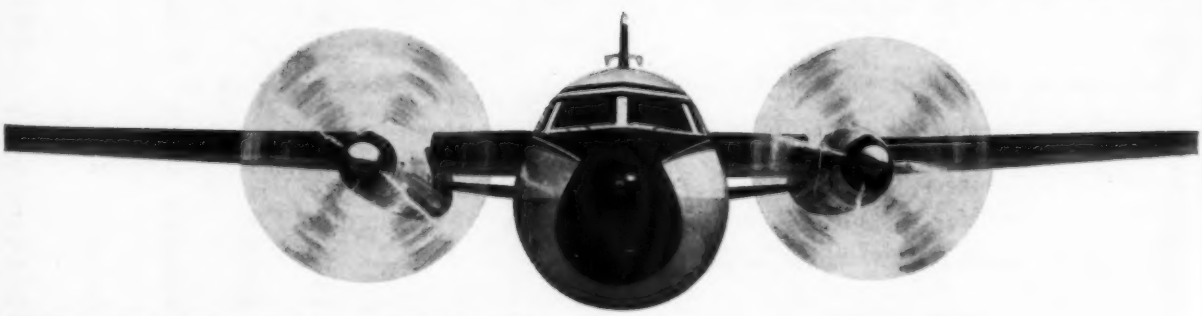
AIRCRAFT LOAD FACTORS

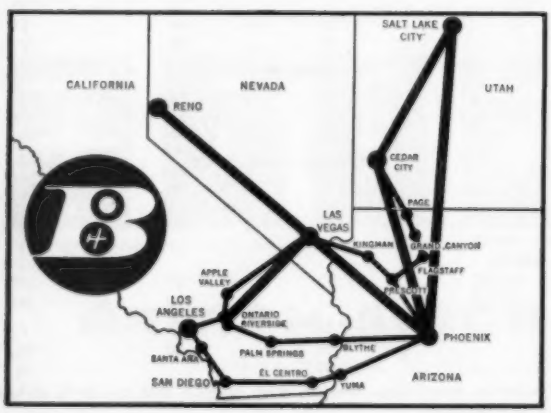
Airline	Load Factor	% Rev. to Avail. Ton-Miles
JET AIRCRAFT		
BOEING 707/720		
AA	71.60	61.1
BNF	66.90	47.38
CAL	52.00	37.50
EAL*	59.23	38.49
NAL**	80.86	58.53
NEA**	66.32	49.02
PAA-121	71.6	62.5
-300	76.9	59.0
TWA-(131)	69.4	51.50
-(331)	62.4	56.60
UAL	75.8	56.8
WAL**	70.00	70.90
CONVAIR 880		
DAL	61.01	48.41
NEA	51.40	48.95
DOUGLAS DC-8		
DAL	70.53	51.53
EAL	61.61	49.15
NAL	74.57	52.01
PAA	58.1	52.8
UAL	73.1	64.4
TURBOPROP AIRCRAFT		
LOCKHEED ELECTRA		
AA	58.60	49.30
BNF	52.14	46.59
EAL	51.86	37.83
NAL	50.22	39.43
NWA	.....	.....
WAL	60.1	50.1
VICKERS VISCOUNT		
CAP	56.2	51.8
CAL	47.5	47.3
NEA	63.83	58.62
PISTON AIRCRAFT		
CONVAIR 240		
AA	63.00	66.60
WAL	59.30	63.70
CONVAIR 340/440		
BNF	50.67	41.86
DAL	54.34	49.12
EAL	46.93	43.46
NAL	41.13	34.12
UAL	50.1	46.4
CURTISS C-46		
BNF (c)	.....	51.68
DAL (c)	.....	50.84
RID (c)	.....	68.60
DOUGLAS DC-3		
CAP	50.9	50.7
CAL	43.7	43.2
DAL	43.12	46.52
MK	29.2	39.9
NEA	52.06	46.67
DOUGLAS DC-4		
CAP	49.4	48.5
MK	44.0	44.8
RID (c)	.....	65.2
SLI (c)	.....	100
DC-6, 6A, 6B		
AA DC-6	61.3	57.1
6A (c)	.....	63.6
6B	56.9	46.8
BNF	59.09	53.67
CAP*	42.7	37.8
CAL	64.1	54.2
DAL	54.13	50.72
EAL**	40.64	33.75
DC-6B	76.77	78.27
MK	56.6	53.9
NAL (DC-6)	50.58	46.38
(6B)	44.68	36.46
NEA	44.09	39.13
PAA DC-6B	64.36	67.8
UAL-6	61.1	56.1
-6A	.....	61.8
-6B	58.2	49.0
WAL	56.4	51.2
DOUGLAS DC-7, 7B, 7C, 7F		
AA DC-7	59.6	47.1
-7F	.....	60.0
BNF-7C	55.44	47.7
CAL-7B	48.1	40.6
DAL-7/7B	58.35	49.16
EAL 7B (68)	53.26	38.89
(72)	51.83	39.42

*Interchange operation. **Leased aircraft.

*Leased. **Interchange operation.

HERE COMES BONANZA!





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BONANZA AIR LINES

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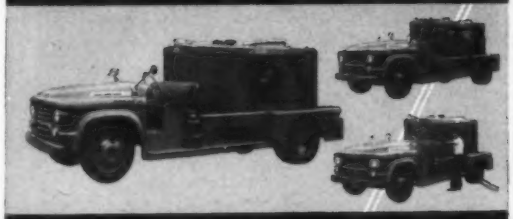
Airline	Load Factor	% Rev. to Avail. Ton-Miles
(90)	54.17	51.20
NAL 7/7B	49.86	40.61
RID	.....	51.9
UAL-7	60.0	51.8
-7A	.....	59.4
LOCKHEED 049/749		
CAP	45.1	39.2
EAL	48.72	37.88
TWA 049	59.3	59.8
749	62.6	57.1
LOCKHEED 1049/1649		
EAL 1049	46.97	42.66
1049C	47.54	35.94
1049C (c)	.....	33.81
1049G	47.59	34.81
NAL 1049H	48.83	44.05
S&W 1049	.....	63.14
SLI 1049H	.....	100.00
TWA 1049	58.5	50.0
1049G	60.2	51.5
1049H	18.2	41.4
1649A	55.1	52.7
MARTIN 4-0-4		
EAL	48.51	51.39
TWA	61.5	62.3

OPERATING COST

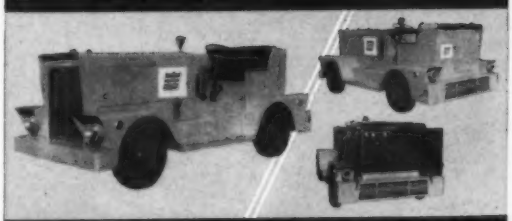
Airline	Cents per Plane-Mile 1960	1959	1958
JET AIRCRAFT			
BOEING 707/720			
AA-123	145.0	168	.....
720	141	.....	.....
BNF	201.22	226.84	.....
CAL	147.0	159.0	.....
NAL*	308.0	260.0	.....
NEA*	350.09	358.2	.....
TWA-131	196.4	257.3	.....
-331	173.6	.....	.....
UAL-720	166.0	.....	.....
WAL*	269.0	.....	.....
*Leased aircraft.			
CONVAIR 880			
DAL	167.0	.....	.....
NEA	191.44	.....	.....
DOUGLAS DC-8			
DAL	211.0	242.6	.....
NAL	243.0	.....	.....
UAL	171.0	252.0	.....
TURBOPROP AIRCRAFT			
LOCKHEED ELECTRA			
AA	181.0	137.0	.....
BNF	165.28	110.8	.....
EAL	.....	132.0	.....
NAL	170.0	110.0	.....
WAL	155.0	139.0	.....
VICKERS VISCOUNT			
CAP	104.7	86.9	91.8
CAL	92.0	95.0	74.5
NEA	105.23	100.1	93.6
PISTON AIRCRAFT			
CONVAIR 240			
AA	81.0	80.0	66.0
WAL	75.0	78.0	78.0
CONVAIR 340			
BNF	86.95	75.4	72.4
DAL	80.0	81.5	81.2
NAL	110.0	99.0	104.0
UAL	97.0	100.0	110.0
CURTISS C-46			
BNF	81.79	89.77	84.2
DAL	90.0	81.1	85.9
RID	63.0	72.0	69.5
DOUGLAS DC-3			
CAP	82.5	62.4	67.3
CAL	70.0	62.0	56.8
DAL	30.0	54.6	53.4
MK	136.0	.....	.....
NEA	71.01	63.1	60.7
DOUGLAS DC-4			
CAP	126.4	93.2	104.6
MK	111.0	.....	.....
RID	117.0	93.0	134.1
S&W	169.0	.....	.....
SLI	85.54	90.6	.....
DOUGLAS DC-6, 6A, 6B			
AA DC-6	103.0	98.0	86.0
-6A	166.0	113.0	104.0
-6B	114.0	108.0	96.0
BNF DC-6	119.64	92.49	97.3
CAP DC-6B*	106.6	.....	.....
CAL DC-6B	130.0	125.0	122.0
DAL DC-6	88.0	85.8	66.8
MK DC-6	286.0	.....	.....
NAL DC-6	154.0	147.0	108
-6B	186.0	153.0	123.0

HOBART MOTOR GENERATOR CORPORATION

...for jet aircraft ground power

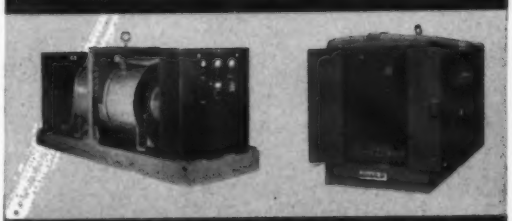


Choice of: AMERICAN, CONVAIR, EASTERN—Truck Mounted—Diesel Engine Driven



Choice of: AIR INDIA, CATHAY, NATIONAL, NORTHWEST, PAN AMERICAN, SABENA, UNITED, WESTERN—Self Propelled—Diesel or Gas Engine Driven

Choice of: AIR FRANCE, QANTAS, SAS, TAA, TEAL—Portable Trailer Type



Choice of: AMERICAN, CONTINENTAL, EASTERN, NATIONAL, NORTHWEST, PAN AMERICAN, SAS, UNITED, WESTERN—Synchronous Electric Motor Driven

There must be a reason why—

...many of the major airlines have standardized on Hobart 400 cycle AC ground power to support their costly new jet aircraft. Some of these are:

1. Range of sizes and types available
2. Rugged industrial design
3. Past performance on the world's airports
4. Service facilities available at major terminals

If you'd like further information about more reasons why—or further details—we will welcome the opportunity to give you all the facts.

Write, wire or phone today. A representative is close by who can give you full details.

MOTOR GENERATOR CORPORATION, Box AA-51, Troy, Ohio
(Hobart Brothers Affiliate)
Cable: Mogen

Airline	Cents per Plane-Mile 1960	1959	1958
NEA-6B	112.62	104.7	102.7
SLI-6A	154.53	146.09	.....
UAL-6	102.0	88.0	105.0
-6A	122.0	120.0	128.0
-6B	120.0	108.0	120.0
WAL-6B	122.0	116.0	118.0

*Leased aircraft.

DOUGLAS DC-7, 7B, 7C, 7F

AA DC-7	180.0	167.0	130.0
-7F	161.0	177.0	.....
BNF-7C	164.83	137.28	116.0
DAL	144.0	135.4	134.9
NAL-7/7B	177.0	236.0	154.0
RID-7C	105.0	.....	.....
UAL-7	153.0	130.0	133.0
-7A	188.0	.....	.....

Airline	Cents per Plane-Mile 1960	1959	1958
LOCKHEED 049/749			
CAP	159.6	142.8	168.0
TWA 049	110.4	103.2	112.1
749	115.2	108.7	103.7
LOCKHEED 1049/1649			
NAL (l)	239.0	171.0	149.0
(c)	144.0	.....	.....
S&W (c)	206.0	.....	.....
SLI	175.02	159.53	.....
TWA	151.1	140.1	125.9
-G	176.7	154.9	134.4
-H	197.9	204.0	210.3
1649	212.8	162.0	131.1
MARTIN 4-0-4			
TWA	91.6	96.7	89.6

Hokanson H-35 Mobile Air Conditioner

Wherever there's a world "hot spot"—climatically speaking that is—you'll find a Hokanson H-35 Mobile Air Conditioner supplying cool, dry air for the comfort of jet age passengers while their plane is on the airport. Outstanding performance in any range of temperature and humidity...trouble-free operation...and low initial cost have made the H-35 ground support air conditioner a favorite of leading airlines the world over.

C. G. HOKANSON COMPANY, INC.
2140 Pontius Avenue • Los Angeles 25, Calif.

Hokanson

"RELIABILITY IN SPECIALIZED AIR CONDITIONING"

MAINTENANCE COST

Airline	Dollars per Hour of Flight 1960	1959	1958
JET AIRCRAFT			
BOEING 707			
AA-123	$ 171.75	$ 137.22	.....
BNF-220	294.17	365.06	.....
CAL	155.03	203.39	.....
TWA-131	221.57	228.07	.....
-331	179.98	392.12	.....
UAL-720	120.11	.....	.....
WAL*	215.89	.....	.....

*Leased aircraft.

CONVAIR 880

DAL	$ 133.79	.....	.....
NEA	169.24	.....	.....

DOUGLAS DC-8

DAL	$ 234.83	$ 224.26	.....
EAL	176.24	.....	.....
NAL	268.50	.....	.....
UAL	167.44	184.96	.....

TURBOPROP AIRCRAFT

LOCKHEED ELECTRA

AA	$ 177.61	$ 108.24	.....
BNF	219.64	125.26	.....
EAL	115.90	142.63	.....
NAL	179.53	75.55	.....
WAL	166.56	103.49	.....

VICKERS VISCOUNT

CAP	$ 84.53	$ 53.59	$ 75.53
CAL	61.09	75.07	39.07
NEA	58.24	50.75	29.95

PISTON AIRCRAFT

CONVAIR 240

AA	$ 45.10	$ 50.16	$ 43.94
WAL	44.02	34.11	33.31

CONVAIR 340/440

BNF	$ 60.44	$ 32.91	$ 31.15
DAL	38.88	39.36	35.84
EAL	36.67	53.57	36.98
NAL	68.70	61.81	64.21
UAL	39.37	38.50	65.51

CURTISS C-46

BNF	$ 69.93	$ 47.04	$ 44.11
DAL	49.83	38.90	42.15
RID	29.81	32.63	33.79

DOUGLAS DC-3

CAP	$ 38.69	$ 21.30	$ 31.94
CAL	20.62	18.64	15.69
DAL	22.46	21.12	19.60
MK	83.24	.....	.....
NEA	34.60	27.41	25.30

DOUGLAS DC-4

CAP	$ 92.72	$ 52.73	$ 77.84
MK	85.16	.....	.....
RID	62.96	51.96	58.02
S&W	84.42	.....	.....
SLI	67.35	68.58	.....

DOUGLAS DC-6, 6A, 6B

AA DC-6	$ 66.10	$ 64.19	$ 59.64
-6A	87.43	54.81	55.21
-6B	73.18	65.42	57.04
BNF-6	112.83	60.31	51.81
CAP-6B*	116.02	.....	.....
DAL-6	61.47	59.06	47.08
EAL-6B	36.12	62.51	38.68
MK-6	91.19	.....	.....
NAL-6	133.67	91.85	80.16
-6B	175.21	100.82	70.78
NEA-6B	61.65	53.99	46.99
SLI-6A	80.35	74.40	.....
UAL-6	55.24	49.27	105.11

Airline	Dollars per Hour of Flight 1960	1959	1958
-6A	55.24	51.14	90.85
-6B	50.06	48.13	86.12
WAL-6B	45.82	42.31	41.07

*Leased aircraft.

DOUGLAS DC-7, 7B, 7C, 7F

AA DC-7	$ 122.21	$ 133.11	$ 84.51
-7F	87.37	135.18	.....
BNF-7C	168.40	101.54	83.81
CAL-7B	120.35	156.96	87.09
DAL-7/7B	101.59	105.21	100.21
EAL-7B	88.60	106.58	72.57
NAL-7/7B	108.45	147.57	96.02
RID-7C	32.10	.....	.....
UAL-7	89.44	89.23	130.70
-7A	97.97	.....	.....

LOCKHEED 049/749

CAP	$ 122.64	$ 90.87	$ 129.58
TWA 049	66.66	66.84	62.04
749	68.89	59.56	64.14

LOCKHEED 1049/1649

EAL 1049	$ 86.95	$ 119.25	$ 114.03
1049C	96.35	120.63	79.33
1049G	83.91	112.13	74.08
NAL 1049H	189.58	167.14	80.15
S&W	146.07	.....	.....
SLI 1049H	125.04	123.59	.....
TWA 1049	135.22	65.75	81.95
1049G	106.84	98.81	.....
1049H	79.93	84.37	.....
1649	125.03	97.45	.....

MARTIN 4-0-4

EAL	$ 37.55	$ 52.96	$ 42.92
TWA	49.68	40.25	35.15

AIRCRAFT UTILIZATION

Airline	No. of Aircraft	Hrs. Per Day Dom.	Int'l
JET AIRCRAFT			
Boeing 707/720			
AA	34	8:12	...
BNF	4	7:04	6:59
CAL	5	10:35	...
NAL	1*	7:02	...
NEA	1*	8:57	...
PAA—121	6	...	6:06
—300	23	...	8:36
TWA—131	15	8:44	...
—331	12	7:42	9:44
UAL	13	5:00	...
WAL	2*	6:56	...
*Leased aircraft			
Convair 880			
DAL	9	5:54	...
NEA	4	2:59	...
Douglas DC-8			
DAL	6	7:14	...
EAL	8	5:53	...
NAL	3	6:31	...
PAA	17	...	5:36
UAL	31	7:24	7:54
TURBOPROP AIRCRAFT			
Lockheed Electra			
AA	33	6:12	...
BNF	8	5:07	4:49
EAL	39	6:51	...
NAL	12	6:22	1:45
WAL	6	7:38	...
Vickers Viscount			
CAP	51	8:55	...
CAL	13	7:08	...
NEA	10	6:59	...

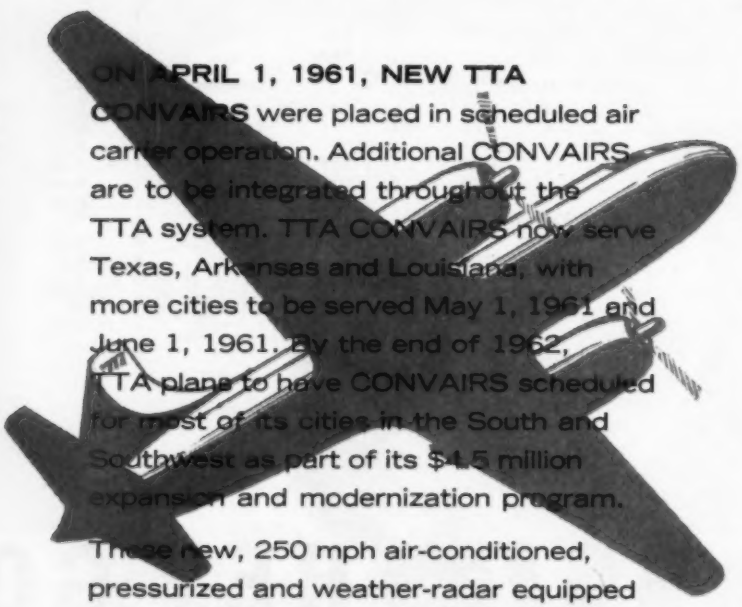
Airline	No. of Aircraft	Hrs. Per Day Dom.	Int'l
PISTON AIRCRAFT			
Convair 240			
AA	34	5:23	...
WAL	4	5:13	...
Convair 340/440			
BNF	31	6:42	...
DAL	26	7:12	7:35
EAL	20	7:12	...
NAL	6	6:48	7:47
UAL	30	4:00	...
Curtiss C-46			
BNF	2(c)	2:54	...
DAL	5(c)	4:47	...
RID	24(c)	4:37	5:53
(c) Cargo			
Douglas DC-3			
CAP	10	5:00	...
CAL	8	5:58	...
MK	2	...	0:56
NEA	6	5:56	...
Douglas DC-4			
CAP	10	5:59	...
MK	3	...	3:05
RID	3(c)	...	6:29
PAA	19	...	5:12
Douglas DC-6, 6A, 6B			
AA DC-6	42	7:02	7:41
-6A	1	6:00	3:22
-6B	16	6:16	6:40
BNF -6	11	7:20	7:20
CAP -6B	11	6:46	...
DAL -6	11	8:25	8:11
MK -6	1	...	3:53
NAL -6	4	4:44	6:36
-6B	8	5:32	4:33
NEA -6B	10	9:59	...

Airline		No. of Aircraft	Hrs. Per Dom.	Day Int'l
PAA	-6A	2	...	4:42
	-6B	40	...	6:00
SLI	-6A	..	6:12	...
UAL	-6	38	5:30	...
	-6A	7	6:12	...
	-6B	40	5:42	6:06
WAL	-6B	27	7:26	11:34
	Douglas DC-7, 7B, 7C, 7F			
AA	DC-7	20	6:25	9:50
	-7F (c)	13	5:54	3:16
BNF	-7C	6	8:41	8:47
CAL	-7B	5	6:50	...
DAL	-7, 7B	20	7:35	7:41
NAL	-7, 7B	8	6:41	6:34
PAA	-7B	7	...	6:06
	-7C	25	...	6:48
RID	-7C (c)	1	4:00	...
UAL	-7	39	7:24	5:00
	-7A	6	5:54	...
	Lockheed 049/749			
TWA	049	29	6:33	...
	749	37	5:08	...

Airline		No. of Aircraft	Hrs. Per Dom.	Day Int'l
	Lockheed 1049/1649			
EAL	1049	12	6:48	...
	1049C	11	6:24	...
	1049G	10	5:51	...
NAL	1049H	4	5:28	4:31
S&W	1049H	9	...	8:30
SLI	1049H	5	7:42	...
TWA	1049G	25	6:54	...
	1049H	8	7:08	5:55
	1049H (c)	..	5:40	6:34
	1649	26	5:24	5:42
	1649 (c)	..	5:29	6:03
	Martin 4-0-4			
EAL		55	6:21	...
TWA		16	4:49	...

(c) Cargo

TTA GOES CONVAIR!



ON APRIL 1, 1961, NEW TTA CONVAIRS were placed in scheduled air carrier operation. Additional CONVAIRS are to be integrated throughout the TTA system. TTA CONVAIRS now serve Texas, Arkansas and Louisiana, with more cities to be served May 1, 1961 and June 1, 1961. By the end of 1962, TTA plans to have CONVAIRS scheduled for most of its cities in the South and Southwest as part of its $4.5 million expansion and modernization program.

These new, 250 mph air-conditioned, pressurized and weather-radar equipped CONVAIRS will add to the comfort and convenience of air travelers in the rapidly-expanding South and Southwest area, providing fast, on-time flights . . . connecting with other airlines that serve cities throughout the U.S.A. and the World.

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FLY TTA

Trans-Texas Airways

serving TEXAS, ARKANSAS, LOUISIANA, MISSISSIPPI and TENNESSEE

TRANSPORT SPEEDS

Airline	Revenue Flight Hrs.	Revenue Miles	Average Speed
JET AIRCRAFT			
BOEING 707/720			
AA	81,141	38,711,000	477
BNF	8,307	3,899,435	469
CAL	18,274	8,623,000	472
EAL**	407	186,430	458
NAL*	2,538	1,161,417	459
NEA*	1,791	828,888	463
TWA -131	47,800	22,650,644	474
-331	29,196	14,525,630	498
WAL	2,968	1,238,276	417
	119,422	91,824,720	477

*Leased Aircraft. **Interchange Operation.

CONVAIR 880			
DAL	6,558	3,078,153	469
NEA	202	83,720	414
	6,760	3,161,873	467
DOUGLAS DC-8			
DAL	12,513	5,407,348	432
EAL	14,218	6,713,068	472
NAL	3,808	1,828,753	470
	30,539	13,979,708	456
TURBOPROP AIRCRAFT			
LOCKHEED ELECTRA			
AA	71,778	20,878,000	291
BNF	14,909	4,359,602	292
EAL	99,334	28,091,272	283
NAL	28,139	7,999,344	282
WAL	16,234	5,017,072	309
	230,394	66,345,290	288
VICKERS VISCOUNT			
CAP	181,763	44,077,341	242
CAL	36,605	9,626,000	262
NEA	25,588	5,737,614	224
	243,956	59,440,955	244
PISTON AIRCRAFT			
CONVAIR 240			
AA	72,945	13,461,000	185
WAL	8,167	1,665,076	204
	81,112	15,126,676	187
CONVAIR 340/440			
BNF	76,919	15,555,863	202
DAL	72,544	14,083,901	194
EAL	52,334	9,426,318	180
NAL	17,703	3,186,473	180
	219,500	42,472,055	193

Airline	Flight Hours	Rev. Miles	Avg. Speed
CURTISS C-46			
BNF	2,120	401,915	190
DAL	8,741	1,597,654	183
RID	31,222	5,972,783	191
	42,083	7,972,352	190
DOUGLAS DC-3			
CAP	19,586	2,623,104	134
CAL	20,539	3,148,000	153
DAL	7,455	1,048,053	141
MK	670	83,428	125
NEA	23,207	3,165,014	136
	71,727	10,067,599	140
DOUGLAS DC-4			
CAP	24,271	3,943,601	162
MK	3,279	608,211	185
RID	5,805	1,207,797	208
SLI	12,457	2,694,664	216
	45,812	8,454,273	184
DOUGLAS DC-6, 6A, 6B			
AA DC-6	111,110	25,285,000	228
-6A	10,061	2,414,000	240
-6B	43,551	9,907,000	227
BNF DC-6	27,177	6,382,551	235
CAP -6B	20,821	4,998,907	240
CAL -6B	3,003	734,000	244
DAL DC-6	42,992	9,999,863	233
EAL -6B	20,898	5,218,958	250
MK DC-6	934	217,595	233
NAL DC-6	8,613	1,800,967	209
-6B	14,100	3,046,482	216
NEA -6B	36,510	8,590,542	235
SLI -6A	1,991	499,792	251
WAL -6B	76,454	18,075,681	236
	418,215	97,171,338	232

Airline	Flight Hours	Rev. Miles	Avg. Speed
DOUGLAS DC-7, 7B, 7F			
AA DC-7	63,617	17,747,000	279
-7F	19,787	5,468,000	276
BNF -7C	17,506	4,854,854	277
CAL -7B	7,484	2,098,000	280
DAL -7/7B	45,848	12,106,980	264
EAL -7B	58,423	14,815,918	254
-7B	14,567	3,786,962	260
-7B	60,567	16,215,732	268
NAL -7/7B	18,053	4,707,382	260
RID -7C	20	5,467	273
	305,872	71,806,295	268
LOCKHEED 049/749			
CAP 049	9,654	2,062,581	214
EAL 749	9,773	2,091,177	214
TWA 049	60,166	13,252,376	220
749	70,557	15,549,861	220
	150,150	32,955,995	219
LOCKHEED 1049/1649			
EAL 1049	27,205	6,453,442	237
1049C	28,945	7,087,798	245
1049 (c)	5,028	1,322,202	263
1049G	21,331	4,738,346	222
NAL 1049H	7,943	1,992,530	251
S&W 1049H	21,510	5,732,773	267
SLI 1049H	9,710	2,415,217	249
TWA 1049	7,592	1,855,166	244
1049G	63,876	16,398,350	257
1049H	17,217	4,487,145	261
1649	55,615	14,544,098	262
	266,472	67,027,067	251
MARTIN 4-0-4			
EAL	115,998	20,229,221	174
TWA	38,312	6,949,964	181
	154,230	27,139,185	176

ENGINE OVERHAUL

Airline	Model	Overhaul Periods & Costs: Time (Hrs.)	Cost per Overhaul
TURBINE ENGINES			
ALLISON D501			
AA	D13	1400	NA
BNF	D13	1200	$21,119
EAL	D13	1200	NA
NAL	D13	1200	17,070
WAL	D13	1600	16,000
P&W JT 3/4			
AA	JT3C-6	1800	NA
	JT3C-7	1200	NA
	JT3D-1	1000	NA
BNF	JT4A-3,-9	1200	21,028
CAL	JT3C-6	1600*	19,900
DAL	JT3C-6	1200	18,000
EAL	JT4A-9	1200	NA
NAL	JT4A-9	1000	18,862
TWA	JT3C-6	1600	NA
	JT4	1400	NA
UAL	JT3C-6	1200	NA
	JT3C-7	1000	NA
	JT4A	900	NA
WAL	JT3C-6	1000	20,000
*Increased to 1800 on 3-1-61.			
GENERAL ELECTRIC CJ805			
DAL	—3	1000	NA
TWA	—3	800	NA
ROLLS ROYCE DART			
CAP	510	3100	$3.07/hr.
CAL	525	1900	$12,500

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West Coast Airlines flies to the most cities in the Pacific West (more than 60, in six great states and Canada) and connects with the most major airlines. Book WCA the rest of the way!

For commercial aircraft water systems

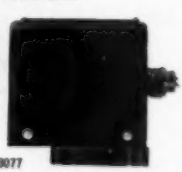
Compact, lightweight compressor maintains water system pressure and flow on commercial jet aircraft. Laboratory *and* field-proven reliability. Guaranteed compressor life 1000 hrs. with recommended maintenance. Operation to flying time ratio, 1:5 hrs. Thirty days after initial shipment, Calco *guarantees* user 24 hour delivery on complete units or parts *anywhere* in continental U.S.A.

DATA

- Operates at -54°C. to +71°C. ambient
- 3-phase, 400 cycles, 115-200V. AC, 2 amps max. motor
- Oil-free air discharge
- Delivers 1 CFM air at 45 p.s.i.g.
- Weight 6 lbs., 12 oz.
- Envelope 6¾ x 6⅛ x 5⅛"

ROTARY ACTUATOR

Cigarette package size actuator remarkably priced for mass application and budget aircraft. Unmatched reliability, "off the shelf" delivery.



Precision electro-mechanical components for airborne and ground support equipment. WRITE FOR SPECIFICS.

Calco MANUFACTURING COMPANY
ADDISON, ILLINOIS

Overhaul Periods & Costs

Airline	Model	Time (Hrs.)	Cost per Overhaul
NEA	510	2900	NA
RID	526	1200	NA
	PISTON ENGINES		
	P&W R2800		
ACA	CB16	1900	$ 7,372
	B	1100	3,144
	—7M2	1600	5,870
AA	CB16/17	2030	NA
	—83AM7	2030	NA
	—83AM4A	1830	NA
BNF	CB16	1800	6,334
	-83AM5	1900	6,452
CAP	CB16/17	1600	$5.63/hr.
DAL	CB16 (DC-6)	2100	11,311
	CB16 (CV440)	1800	12,062
	-57	1200	7,500
EAL	CB3	1900	8,097
	CB16	1900	8,097
	CB17	2320	8,097
NAL	CB16	2000	7,851
NEA	CB16	2000	NA
RID	-34	1450	5,600
	-51M1	1550	3,600
	-7M2	1550	8,600
TWA	CB16	2000	NA

Overhaul Periods & Costs

Airline	Model	Time (Hrs.)	Cost per Overhaul
UAL	CB16	1800	NA
	CB16	2500	NA
	CB16	2000	NA
	CB16	1700	NA
WAL	CB16	2100	8,200
	WRIGHT TURBO COMPOUND		
AA	DA2/4	1500	NA
BNF	EA1	1400	11,005
CAL	DA4	1500	24,900
DAL	DA2	1400	14,054
EAL	CB1	1900	12,098
	DA1	1500	15,482
	EA3	1600	15,482
	DA4	1600	15,482
	EA1	1600	15,482
	EA4	1600	15,482
NAL	DA2,4	1300	9,898
	EA1,3	1300	9,898
RID	EA1	1000	NA
S&W	DA3	1500	NA
Slick	EA6	1500	15,494
TWA	DA3	1600	NA
	EA3	1600	...
	EA6	1600	...
	EA2	1600	...
UAL	DA2,4	1400	NA

FLIGHT CREW EMPLOYMENT

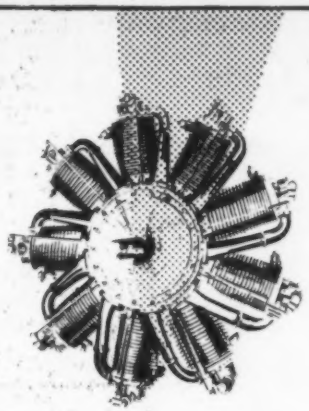
Airline	Pilots and Co-pilots 1960	Pilots and Co-pilots 1959	Flight Engineers 1960	Flight Engineers 1959	Cabin Attendants 1960	Cabin Attendants 1959
American	1,550	1,661	607	647	1,385	1,443
Braniff	422	433	110	105	291	324
Capital	708	775	32	34	438	508
Continental	323	247	....	38	195	227
Delta	750	719	....	....	510	526
Eastern	1,630	1,839	542	605	1,294	1,538
Mackey	15	....	2	....	11	....
National	295	361	117	116	259	296
Northeast	294	269	50	56	200	193
Northwest	490	607	196	256	420	571
Panagra	....	108	....	....	....	99
Pan Am	1,430	1,574	507	544	NA	1,220
Riddle	179	79	5	....	.. .	....
S&W	108	....	63	....	....	19
Slick	30	91	13	15	25	2
TWA	1,399	1,500	583	614	1,476	1,352
United	1,450	1,454	698	629	1,282	1,102
Western	262	287	110	121	248	258
Total	11,335	11,004	3,635	3,780	8,034	9,659

Others: CAL-Directors-pass. service (21); RID-navigators (2); S&W-navigators (14); TWA-navigators (62); NWA-navigators (26); UAL-navigators (24).

ENGINEERING/MAINTENANCE EMPLOYMENT

Airline	Total Maint. & Inspection	Engineering	Total Productive	Total Overhead	Line Maintenance	Aircraft Overhaul	Engine Overhaul	Instrument Overhaul	Accessory Overhaul	Communications Electronics	Other
AA	3,181*	146	1,979	1,348	138	527	457	160	321	81	537
BNF	1,531	68	915	684	142	114	77	22	48	93	1,103
CAP	2,380	33	2,123	257	967	125	155	36	73	134	620
CAL	842	12	643	211	297	109	117	40	55	25	..
DAL	2,242	64	1,888	418	871	455	471	80	54	102	273
EAL	5,602	53	4,750	905	2,225	772	704	(A)	464	580	910
NAL	1,036	30	932	134	457	125	171	..	57	37	44
NEA	1,144	12	1,149	7	702	135	82	19	47	107	57
RID	146	7	128	25	74	31	..	..	10	13	..
S&W	167	24	..	..	..	..	..	..	..	..	..
SLI	61	..	47	14	6	..	..	..	..	..	..
TWA	5,751	117	5,086	782	2,717	811	694	89	190	225	360
UAL***	3,731	248	2,719	1,012	..	714	1,075	155	328	94	1,050
WAL	560**	4	560	..	228	..	70	11	66	22	163

(A) Eastern accessory ovhl. includes instruments.
* Totals for Tulsa Engineering & Maint. center only.
** Productive only. Source: AIRLIFT research.
*** UAL total excludes 2,831 field maintenance.



SOCIÉTÉ NATIONALE
D'ÉTUDE ET DE CONSTRUCTION
DE MOTEURS D'AVIATION
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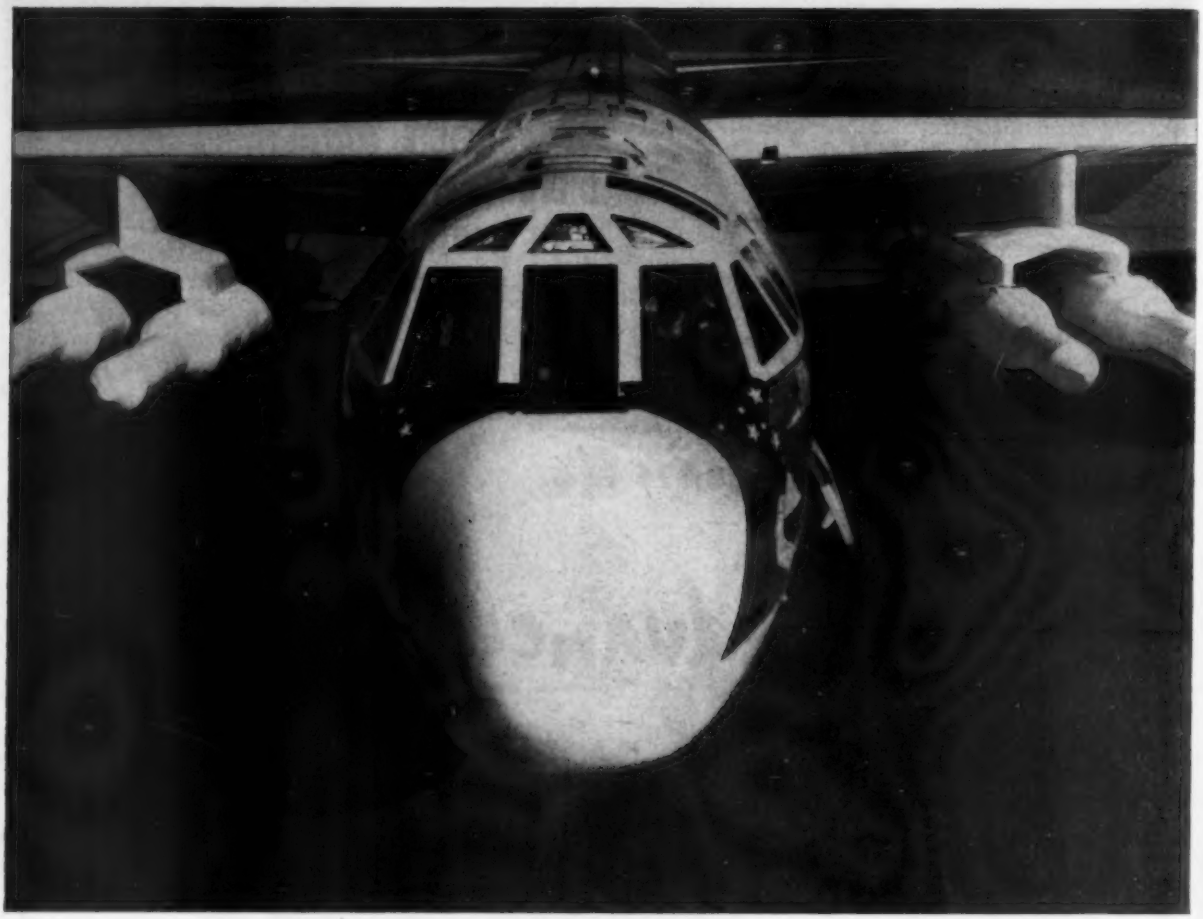
Fifty years of...

advanced designs

TURBO-RÉACTEUR
ATAR 9



MISSILE BOMBER. New "H" model is latest version of famous Boeing B-52 missile bomber, most versatile long-range weapon system in U.S. Air Force arsenal. B-52H here carries mock-ups of four Skybolt air-launch ballistic missiles. B-52s can also carry supersonic Hound Dog missiles for in-flight launching toward distant targets. Flying high or low, B-52s will provide an almost undetectable launch pad for missiles. They can also carry regular load of gravity bombs, and strike up to five targets on single mission.

Capability has many faces at Boeing

RESEARCH STATION. Model of space research station designed by Boeing to accommodate12 men and remain in earth orbit, serving as research station or interplanetary launch site.

SPACE CHAMBER. Boeing multi-stress chamber simulates six conditions of space travel in research to develop protective environments required for space vehicle crews. Chamber will also be used to test conditions in moon stations.

"FLYING" BOAT. Drawing of 115-foot hydrofoil craft Boeing is building for U.S. Navy. Riding out of water, hydrofoil will "fly" on underwater wings at speeds up to 45 knots. Powered by two 3000-hp gas turbine engines, craft will be the biggest hydrofoil ever built.

BOEING

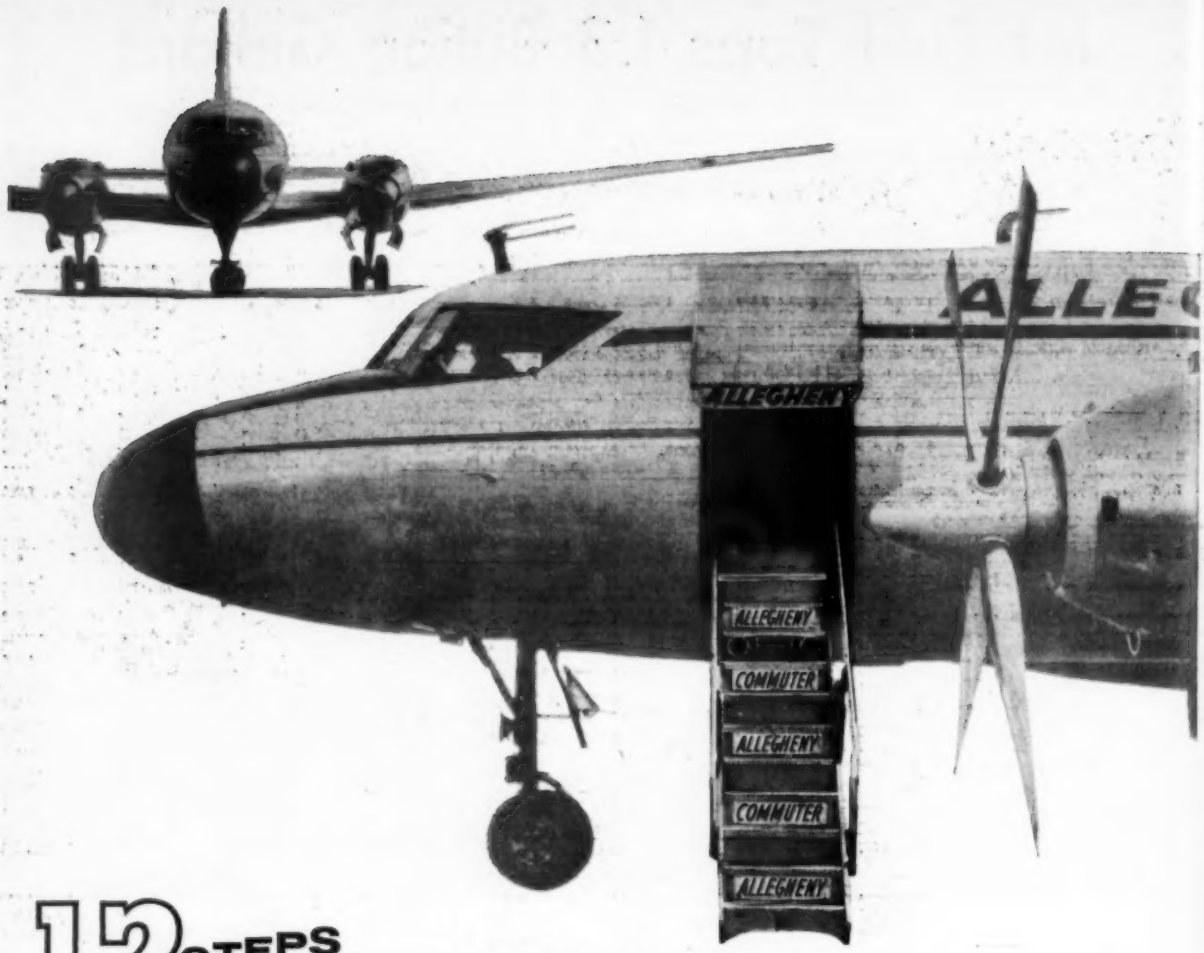
Jet Fuel Tops 1.3 Billion Gallons

Avgas total is 1.18 billion as U.S. trunks burn only 843 million gallons compared to 964 million in jet fuel.

1960 FUEL AND OIL CONSUMPTION

	Gallons Avgas	Expense ($) Avgas	Gallons Oil	Expense ($) Oil	Gallons Kerosene	Expense ($) Kerosene	Gallons Jet Oil	Expense ($) Jet Oil
Domestic Trunks								
American	130,594,314	$ 23,460,877	1,970,806	$ 774,575	243,304,719	$ 23,745,244	57,577	$ 308,148
Braniff	35,474,297	6,103,906	440,787	163,206	30,221,201	2,677,327	.....	.....
Capital	23,487,702	3,850,117	281,067	97,195	85,433,591	9,367,513	20,015	139,286
Continental	8,122,751	1,571,061	172,772	44,981	59,990,509	6,551,716	.....	39,185
Delta	65,485,312	10,276,070	825,773	264,910	46,964,238	4,548,064	.....	35,802
Eastern	156,496,686	24,947,164	2,048,777	752,781	107,210,169	10,012,658	31,555	161,383
National	27,709,474	4,201,977	354,180	120,315	37,719,684	3,567,058	15,079	92,331
Northeast	18,784,085	3,080,600	221,724	88,213	12,832,158	1,422,237	.....	28,129
Northwest	54,893,599	9,178,393	703,257	252,462	21,400,567	1,893,332	12,404	50,376
TWA	132,636,306	21,773,331	1,651,816	558,841	127,725,685	12,397,999	22,025	96,990
United	157,477,848	27,527,813	2,498,820	831,663	173,333,289	16,801,124	28,199	136,336
Western	32,249,002	5,745,243	361,486	139,384	18,457,528	1,854,857	.....	.....
Total	843,411,376	$141,716,552	8,531,265	$ 4,088,526	964,593,338	$ 94,839,129	186,854	$ 1,087,966
International								
American	5,265,402	$ 954,497	78,938	$ 29,210	.....	.....	.....	.....
Braniff	4,761,836	1,030,016	94,032	62,006	3,868,437	$ 535,483	.....	$ 413
Delta	2,645,316	507,121	37,093	21,559	.....	.....	.....	.....
Eastern—San Juan	15,678,200	2,617,457	192,772	75,038	5,089,711	506,368	763	3,350
Bermuda	1,284,035	209,612	17,204	6,448	787,976	79,645	72	303
Mexico	4,418,677	762,060	54,655	21,470	616,956	60,613	54	272
Mackey	1,258,497	251,332	11,566	.....	.....	.....	.....	.....
National	1,284,155	207,109	16,545	7,269	4,672	474	3	15
Northwest	19,490,992	4,241,554	232,083	140,969	3,123,083	418,648	394	1,856
Pan American—Alaska	2,821,744	815,735*	30,723	23,807*	2,508,250	321,991*	58	98*
Atlantic	30,337,604	7,289,245*	411,248	301,496*	126,980,781	11,791,505*	30,791	159,169*
L.A.D.	41,926,028	9,362,907*	514,162	300,231*	37,642,572	3,512,331*	.....	3,203*
Pacific	18,071,170	.....	237,987	.....	82,865,016	.....	7,478	.....
Panagra	8,304,530	2,050,199	143,175	121,502	4,706,700	597,762	.....	707
Resort	3,204,831	633,499	35,833	.....	.....	.....	.....	.....
Trans-Caribbean	5,107,095	1,013,201*	70,161	37,501	.....	.....	.....	.....
TWA	19,135,070	3,789,729	267,045	161,934	52,714,902	5,130,555	6,543	36,533
United	1,645,974	295,252	22,476	7,581	20,058,847	2,059,377	1,438	7,167
Western	994,575	816,400	10,459	21,550	.....	.....	.....	.....
South Pacific	514,348	150,332	6,081	.....	.....	.....	.....	.....
Total	188,150,079	$ 36,997,257	2,484,238	$ 1,339,571	340,967,903	$ 25,014,752	47,594	$ 213,086
Local Service								
Allegheny	9,259,921	$ 1,523,865*	128,400	$ 46,278	1,347,789	$ 87,492*	624	$ 10,307*
Bonanza	802,696	151,006	8,710	5,407	4,428,245	578,391	1,164	7,265
Central	2,869,071	480,546	31,287	17,198	.....	.....	.....	.....
Frontier	7,703,133	1,467,474	72,574	33,253	.....	.....	.....	.....
Lake Central	2,809,312	482,885*	32,450	18,608*	.....	.....	.....	.....
Mohawk	7,112,428	1,356,264	105,747	46,094	.....	.....	.....	.....
North Central	11,693,967	2,014,262	99,981	52,643	.....	.....	.....	.....
Ozark	5,546,760	986,972	68,383	17,856	1,758,801	215,343	.....	1,089
Pacific	4,764,577	848,487	63,991	40,319	3,470,452	380,737	3,246	4,702
Piedmont	3,122,592	543,683	40,822	21,797	4,677,212	540,877	1,527	10,917
Southern	4,234,247	733,886	41,556	20,775	.....	.....	.....	.....
Trans-Texas	5,174,346	793,556	64,300	30,597	.....	.....	.....	.....
West Coast	2,895,842	516,670	29,064	19,949	4,331,424	542,615	1,080	11,408
Total	67,988,892	$ 11,899,556	787,265	$ 370,774	20,013,923	$ 2,345,455	7,641	$ 45,688
Cargo								
Aaxico	7,357,988	$ 187	77,109	.....	.....			
Aerovias	1,058,286	671,69**	9,232	$ 21,474*	.....			
Flying Tigers	20,045,641	4,095,842	214,231	178,827	.....			
Riddle	6,934,645	1,208,261	132,824	62,308	48,144			
Seaboard	16,078,170	2,805,453	233,815	134,500	.....			
Slick	10,711,460	2,059,541	122,370	70,567	.....			
Total	62,186,190	$ 10,840,976	709,581	$ 467,676	48,144			
Helicopter								
Chicago	1,187,391	$ 229,675	14,696	.....				
Los Angeles	422,961	75,472	7,444	.....				
New York	.....	211,879	.....	.....				
Total	1,610,352	$ 517,026	22,140					
Alaska, Hawaii and Territorial								
Alaska Air	5,131,735	$ 1,089,838	66,770	$ 36,129	.....	.....	.....	.....
Alaska Coastal	806,500	227,145	13,250	.....	.....	.....	.....	.....
Cordova	483,731	146,566	9,974	.....	.....	.....	.....	.....
Ellis	461,488	99,017	4,651	.....	.....	.....	.....	.....
Bodiac	2,942		27	.....	.....	.....	.....	.....
Northern Consolidated	133,428	53,601*	1,109	.....	977,903	$ 288,906*	457	.....
Pacific Northern	7,308,566	1,408,099	217,199	33,060	.....	.....	.....	.....
Reeve	1,048,832	362,619	11,332	.....	.....	.....	.....	.....
Western Alaska	40,854	14,037	592	792	.....	.....	.....	.....
Wien	957,609	346,538	11,359	.....	492,203	141,573	315	.....
Aloha	548,151	424,661	6,390	14,693	2,618,548	.....	502	.....
Hawaiian	5,332,650	1,054,476*	82,307	53,817*	.....	.....	.....	.....
Caribbean	1,132,817	51,134	11,490	.....	.....	.....	.....	.....
Total	23,409,303	$ 5,277,731	436,402	$ 138,491	4,088,651	$ 430,479	1,274	

* Figures for the Year Ended September 30, 1960.



12 STEPS TO MORE PROFITS!

FOR PASSENGERS. THE CANADAIR/CONVAIR 540 saves time in commuter travel. Napier Eland jet-powered speed extends effective territory. Smooth, vibrationless flight and a spacious, comfortably pressurized cabin permit work or planning without travel tension. Convenient carry-on baggage racks and built-in air stairs shorten terminal-to-takeoff and touchdown-to-taxicab times. And to the business traveler, time is money.

FOR OPERATORS. THE CANADAIR/CONVAIR 540 increases productivity per fleet unit. Optional seating capacities of 52, 60 and 72, and airline-reported direct operating costs as low as 89¢ per mile expand earning power. With full-payload range up to 815 miles, cruising speed up to 327 mph, and intermediate stops possible in less than 10 minutes, the 540 does more work for its operator than any comparable transport. And satisfied passengers become repeat customers.

Jet power for the Canadair/Convair 540 is the 3500 ehp Napier Eland turboprop, designed and built for local service air transport by manufacturers with a tradition of more than 150 years of engineering leadership. World-wide parts and service support is provided by Napier, and Canadair, Ltd., a subsidiary of the General Dynamics Corporation. Now in regular service in North America with ALLEGHENY AIRLINES, INC., QUEBECAIR, INC., and the ROYAL CANADIAN AIR FORCE.

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The locals' biggest, Allegheny's 52-seat Eland Convair 540

Local Revenues Climb 19.5% in '60

LOCAL SERVICE AIRLINES count 1960 as one of their more successful years and are optimistic about 1961, but they are still pressing for solution of their No. 1 problem: access to greater traffic potential.

Among last year's "plus" factors were:

CAB's new class mail rate system, under which 11 of the 13 locals are now operating, and the Board's approval of a 9% to 12.7% rate of return on investment.

The Board's firmness in adhering to its use-it-or-lose policy, eliminating communities from local service routes when they fail to meet minimum traffic standards.

Major progress was made in the industry's reequipment program.

A "minus" factor is the continuing increase in subsidy. CAB says the subsidy accrual for locals will be $62,104,000 in fiscal 1961 and $68,198,000 in fiscal 1962. The carriers would be happy to reverse the trend, but they point again to their big need: more traffic.

A $1.6-million profit

The traffic and financial picture for 1960:

Total operating revenues jumped 19.5% to $146,831,000, while operating expenses increased 18.8% to $145,063,000, resulting in operating profit of $1,768,000. Net profit was $1,620,000, a figure that may be misleading because it may include money from CAB's setting of final mail rates for past periods.

Passenger revenues increased by 14.2%.

Originating passengers were up 6.9% to 5,695,958. Available seat-miles increased 17.6% and passenger-miles 10.7%. Load factor fell 2.6 points to 42.3%.

Mail, express and freight ton-miles gained 23.4%, 9.5% and 23.3%, respectively.

All but two lines—Piedmont and Lake Central—recorded 1960 increases in passengers and passenger-miles. Piedmont dropped 5.3% in passenger-miles and 5% in passengers. LCA dipped 0.6% in passenger-miles but held even with 1959 in passengers.

Biggest gains were by Allegheny (33% in passenger-miles and 19.2% in passengers), West Coast (29.4% and 13.4%), Bonanza (17% and 15.4%) and Frontier (14.9% and 10.1%).

Five carriers—North Central, Allegheny, Mohawk, Pacific and Ozark—accounted for 54.3% of the industry's passenger-miles and 59.3% of the passengers. North Central alone handled 17% of the passengers and flew 14.6% of the passenger-miles.

First for Bonanza, North Central

Among the year's highlights: Bonanza claimed the distinction of becoming the first operator with an all turbine-powered fleet (F-27s). North Central became the first local line to enplane more than 1 million passengers. Allegheny's no-reservations commuter flights showed outstanding results on the Pittsburgh-Philadelphia-Providence-Boston route.

The year also was marked by an Air Line Pilots Association strike at Southern, and by the company's gradual resumption of service with non-union pilots.

The locals agree with CAB chairman Alan Boyd's statement that they have been "limping along with miserable earnings records." From the start of local service through June 30, 1960, the unappropriated retained earnings of all 13 carriers amounted to a net *loss* of $3,723,000 on gross revenues of $686 million.

Most of the locals describe the class mail rate system as 1960's most encouraging development, and one which may improve their finanical picture. The exception is Central, which has refused to accept the plan.

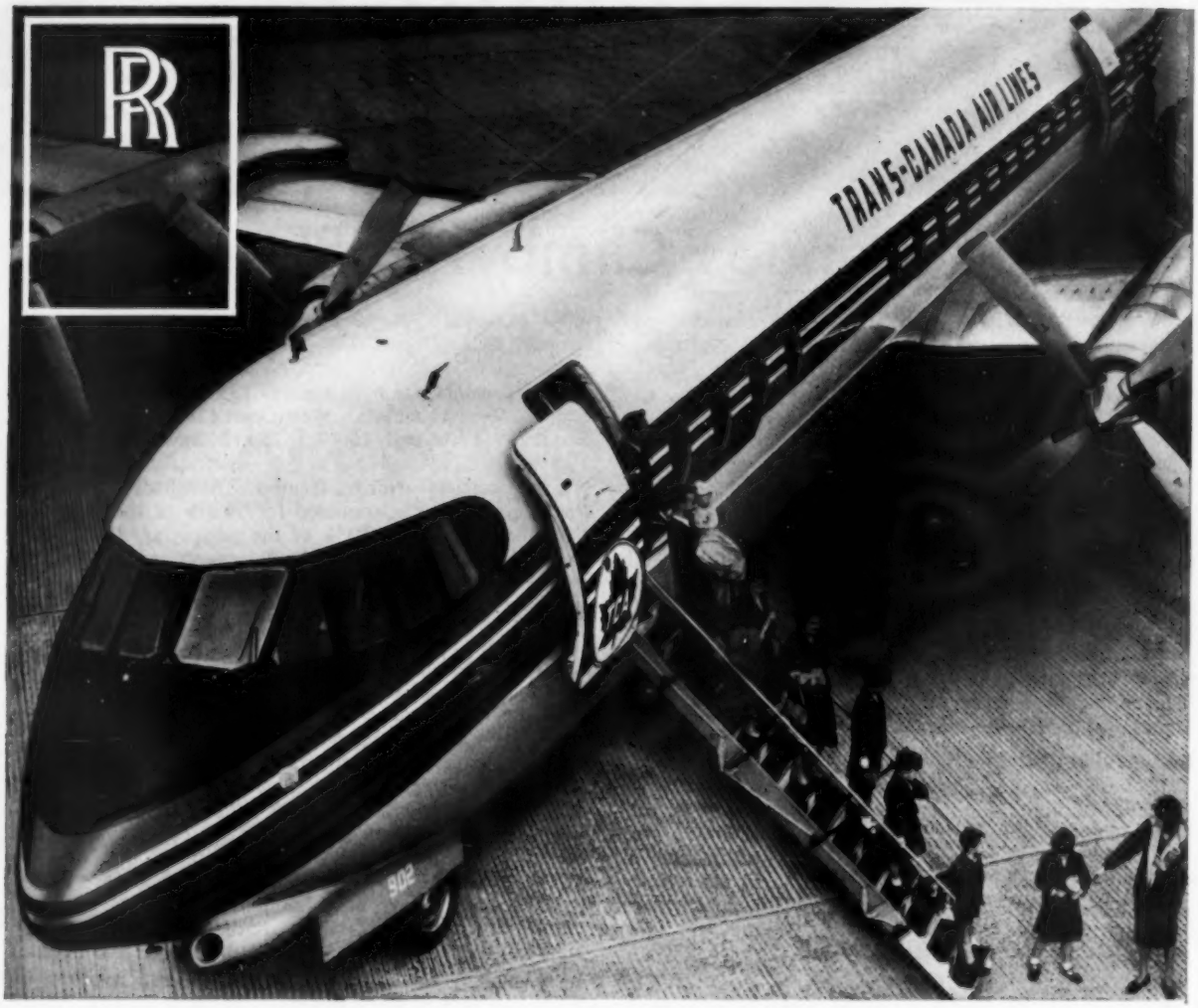
The class mail rate is based on a carrier's average num-

Three-Year Look at Locals

	1958	1959	1960	1960/59 % Change
Originating passengers	4,333,038	5,328,706	5,695,958	+ 6.9%
Rev. passenger-miles (000)	844,372	1,057,134	1,170,779	+10.7%
Available seat-miles (000)	1,824,856	2,355,213	2,768,591	+17.6%
Rev. passenger load factor	46.3	44.9	42.3	− 2.6%
Average passenger journey	195	198	206	+ 4.0
Scheduled miles completed (%)	97.5	97.2	97.0	....
Mail ton-miles*	1,720,595	2,199,332	2,714,125	+23.4%
Express ton-miles	1,802,287	2,209,986	2,419,288	+ 9.5%
Freight ton-miles	2,253,408	3,125,139	3,852,913	+23.3%
Employes	9,325	11,440	12,413	+ 8.5%

* Including nonpriority)

TCA—FIRST IN NORTH AMERICA WITH NEW VICKERS VANGUARDS!



FLY THE ROLLS-ROYCE WAY TO AND ACROSS CANADA!

Trans-Canada Air Lines introduces the Vanguard—newest, finest and fastest turbo-prop in North America—now in service from coast-to-coast across Canada. What makes this plane so special? The experience and craftsmanship that went into its design. Built by Vickers-Armstrongs—a member company of the British Aircraft Corporation which also produced the Viscount—the new Vanguard is the result of know-how gained through more than three million Viscount flight hours.

And it is powered by Rolls-Royce engines...your assurance of top quality in performance...plus a superbly smooth, quiet ride.

All of this means that you travel the "Rolls-Royce" way...fly at 425 miles per hour...relax in the most elegant, comfortable surroundings and enjoy TCA's outstanding "Welcome-Bienvenue" hospitality. For your special convenience you'll find built-in ramps, picture windows, inner-wall radiant heating and four separate cabin compartments. Choice of luxurious First Class or thrifty Economy class.

Fly the Vanguard now across Canada and from Tampa, Florida to Toronto...regular flights to Canada from New York and Chicago will begin June 15. Next time you fly to or across Canada, fly the Rolls-Royce way—fly TCA!

When you think of Canada, think of

TRANS-CANADA AIR LINES **AIR CANADA**

ber of revenue plane-miles flown per station per day in the month, applied to the available seat-miles flown in the month. Each carrier knows in advance the amount of subsidy it will receive. In addition, the plan provides subsidy adjustments for new routes and new equipment and contains a fixed allowance for increased costs.

Most airlines feel the system will enable them to make more accurate operating decisions directly related to expenses and profits.

In another major development last year, the locals' reequipment program pushed forward rapidly. Of the 320-plane fleet, 96 are turbine-powered or are of the Convair and Martin piston types. CAB points out that in fiscal 1958, only three of the 13 lines were operating aircraft other than the DC-3.

One is all-F-27

Currently, one is conducting all operations with F-27s, six operate mixed fleets of DC-3s and one other type, and two fly DC-3s and two other types. In fiscal 1958, less than 3% of plane-miles were with newer equipment; in 1960, the figure was 29.6%.

Other indications of the locals' progress are contained in a new report prepared for the Association of Local Transport Airlines by Planning Research Corp. It shows that:

Traffic and commercial revenues have grown six to eight times since 1950, while subsidy has increased only two and one-half times.

The industry in 1960 served more than 115 million population in 536 cities. Some 336 of these cities received their only air service from locals.

More than 8,000 route miles have been added in the past three years, 4,600 of them in the past year.

Include military bases

Locals are serving 355 military bases, of which 60 are entirely dependent on them for commercial air service.

Route miles have increased 101% in the past 10 years, and cities served exclusively increased 90%. In the same period, the trunks' route miles gained only 13% and cities served exclusively decreased 25%. Passenger train-miles dropped 41%.

Industry employment tops 12,000, and annual payroll is $63.5 million.

On the pessimistic side, the report states that new turbine-powered equipment—both local and trunk—"has not brought with it the economies in labor cost which were anticipated from the greater productivity of the aircraft. These costs, together with mounting depreciation and amortization charges, continue to be the major problems in airline cost control." ■

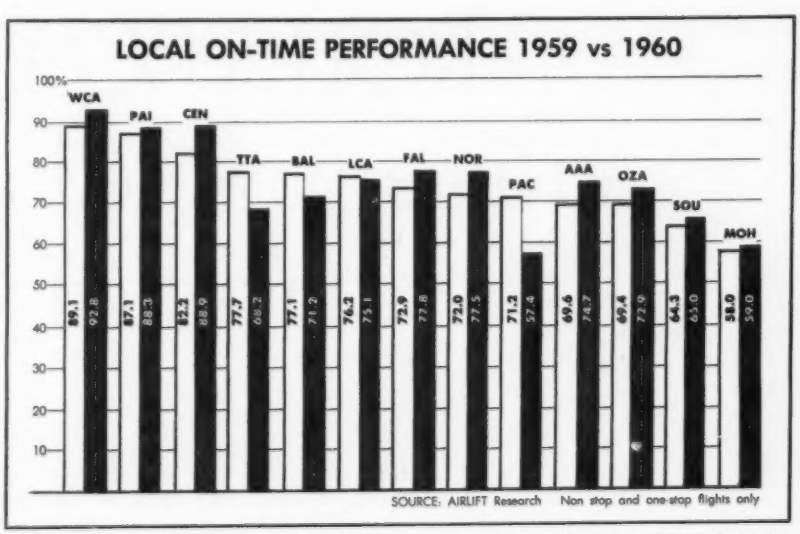
Local Airline Traffic Rankings

Revenue Passenger Miles

Rank	1960 Airline	Rev. Pass. Miles (000)	% of Total	% Change 1960/59	Rank	1959 Airline	Rev. Pass. Miles (000)	% of Total
1.	North Central	171,732	14.6	7.4	1.	North Central	159,835	15.0
2.	Allegheny	131,657	11.2	33.2	2.	Mohawk	109,862	10.4
3.	Mohawk	119,409	10.2	8.7	3.	Pacific	104,878	9.9
4.	Pacific	114,810	9.8	9.5	4.	Piedmont	102,483	9.7
5.	Ozark	99,971	8.5	6.5	5.	Allegheny	98,878	9.3
6.	Piedmont	97,048	8.3	—5.3	6.	Ozark	93,860	8.9
7.	West Coast	93,188	8.0	29.4	7.	Frontier	78,304	7.4
8.	Frontier	90,028	7.7	14.9	8.	West Coast	72,021	6.8
9.	Trans-Texas	72,035	6.2	7.2	9.	Trans-Texas	67,218	6.3
10.	Bonanza	65,155	5.5	17.0	10.	Bonanza	55,694	5.3
11.	Southern	46,765	4.0	2.6	11.	Southern	45,583	4.3
12.	Lake Central	35,974	3.1	—0.6	12.	Lake Central	36,194	3.4
13.	Central	33,007	2.8	2.1	13.	Central	32,324	3.1
	Total Industry	1,170,779		10.7		Total	1,057,134	

Passengers

Rank	1960 Airline	Rev. Pass. (000)	% of Total	% Change 1960/59	Rank	1959 Airline	Rev. Pass. (000)	% of Total
1.	North Central	967	17	6.0	1.	North Central	912	17.2
2.	Allegheny	670	12	19.2	2.	Allegheny	562	10.5
3.	Mohawk	590	11.5	5.4	3.	Mohawk	560	10.5
4.	Ozark	563	10.0	4.5	4.	Ozark	539	10.0
5.	Pacific	499	8.8	7.1	5.	Piedmont	481	9.0
6.	Piedmont	457	8.0	—5.0	6.	Pacific	466	8.7
7.	West Coast	389	6.8	13.4	7.	West Coast	343	6.4
8.	Frontier	338	6.0	10.1	8.	Frontier	307	5.8
9.	Trans-Texas	307	5.4	8.1	9.	Trans-Texas	284	5.3
10.	Bonanza	262	4.6	15.4	10.	Southern	255	4.8
11.	Southern	257	4.5	0.8	11.	Bonanza	227	4.3
12.	Lake Central	227	4.0	....	12.	Lake Central	227	4.3
13.	Central	169	3.0	1.8	13.	Central	166	3.1
	Total Industry	5,695		6.9		Total	5,329	



TWO-YEAR COMPARISON of local airline "on time" performance shows that nine of the thirteen carriers recorded an improvement in 1960 (black) over 1959 (white). West Coast, Piedmont and Central, the leaders in '59, repeated their performance in '60.

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Despite the progress chronicled in the report, and despite class mail rates and new equipment, the fact remains that the locals, to break even, would have to have a load factor of 69.7%, or 27.3 points above its present level. Each percentage point increase in load factor would mean $1.4 million more annual revenue for the industry.

How can traffic be increased and subsidy decreased? CAB says new equipment and expanded route systems will tend to increase subsidy in the years immediately ahead. "They should, however, after a period of integration, make a substantial contribution toward reversal of this trend," the Board adds.

All agree, but disagree

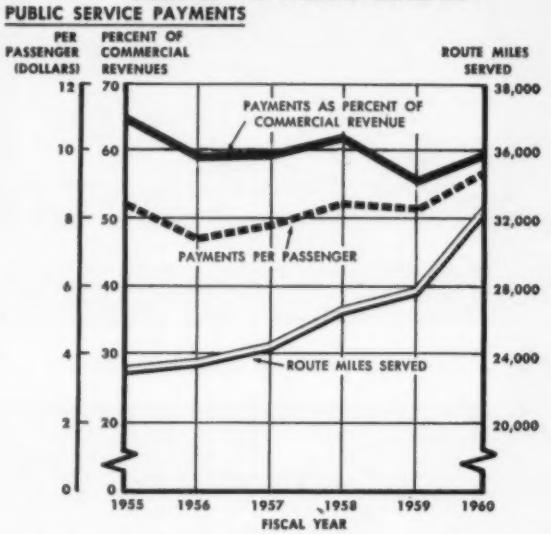
Locals don't agree completely with this statement. New routes and new equipment don't solve the problem, they state. "When we are permitted to operate our present route systems in an *economic* manner, subsidy will show a continuing reduction," says one observer.

CAB chairman Boyd states: "The carriers must have the right to extend the distance between landings. Maybe what I am saying here is that assuming we can work out our subsidy problems, the management of the local carriers must have more flexibility in their operation.

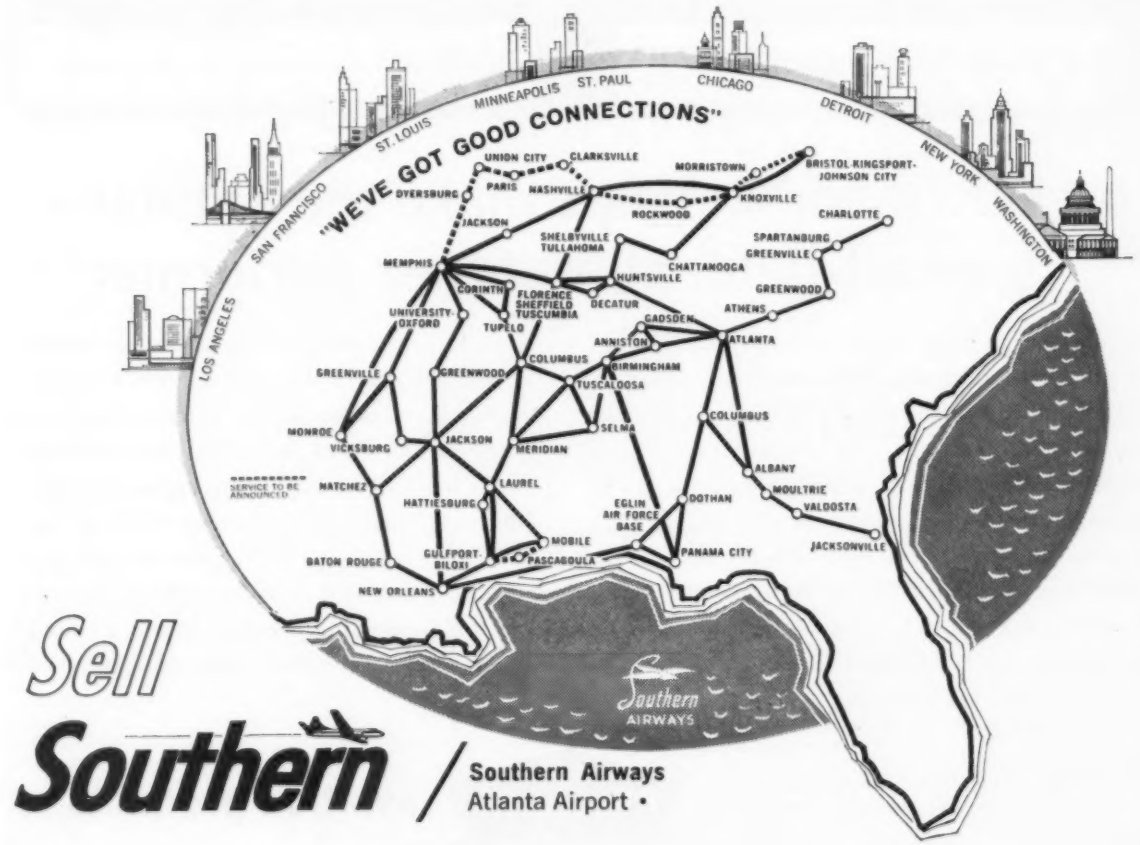
"This cannot be done, however, to the detriment of the existing pattern of service provided by the trunk carriers. The CAB has undertaken a gradual program to authorize skip-stop and nonstop authority . . . This has proved to be of benefit. Carrier management feels, however, that the Board has not yet sufficiently relaxed its restrictions."

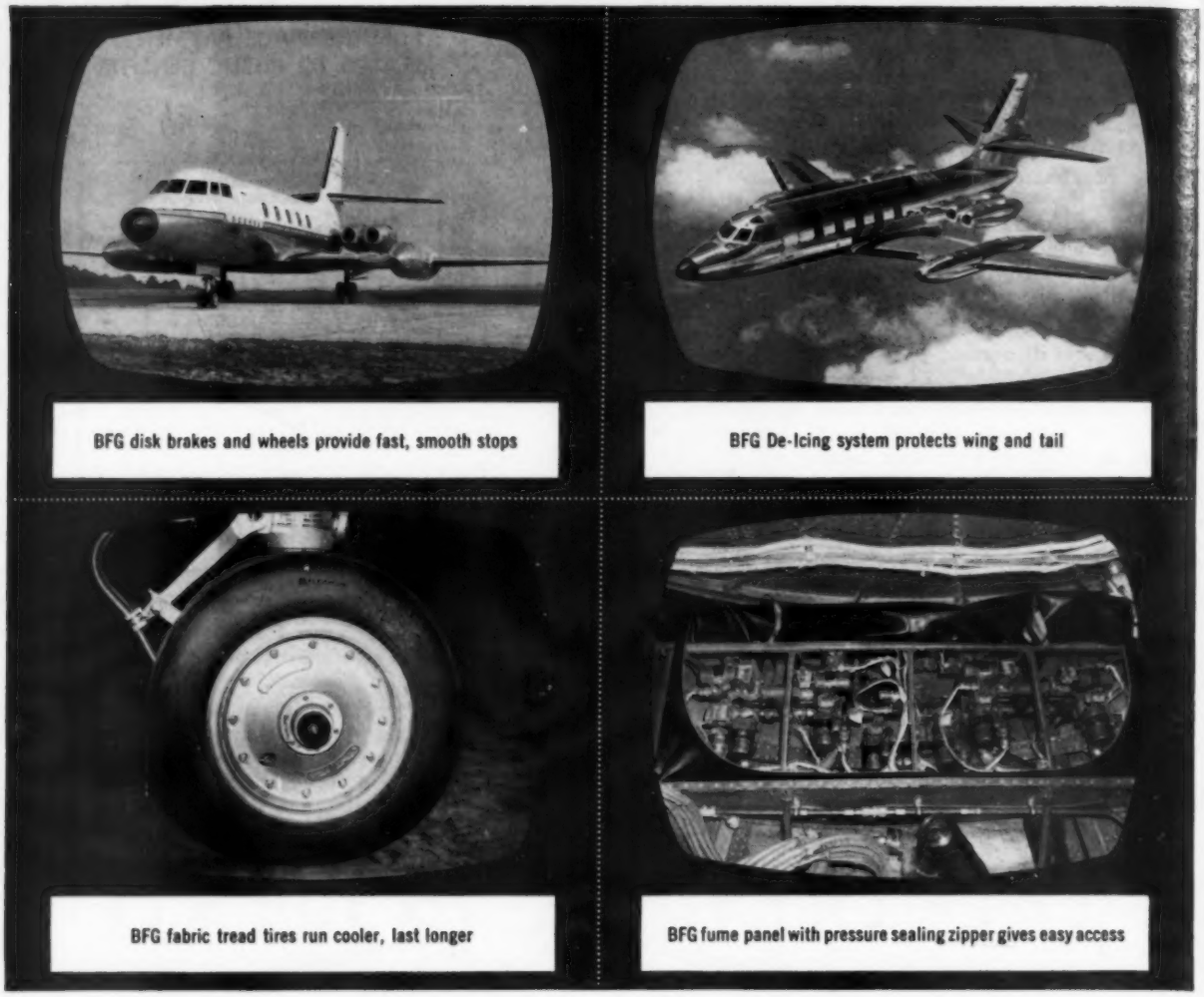
Management indeed agrees that restrictions haven't been sufficiently relaxed. And some industry officials won't buy Boyd's statement that flexibility must not be obtained to the detriment of the trunks. Removal of restrictions might divert from the trunks in some instances, but would result in a substantial decrease in subsidy now paid by the taxpayers, they maintain. ■

PUBLIC SERVICE PAYMENTS RELATED TO PUBLIC BENEFITS



SHARP RISE in subsidy per passenger was touched off by even sharper rise in route miles served.





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BFG De-Icing system protects wing and tail

BFG fabric tread tires run cooler, last longer

BFG fume panel with pressure sealing zipper gives easy access

B.F.Goodrich helps make the JetStar a small-field, all-weather performer

All-weather capability of the new Lockheed JetStar gets an assist from proven BFG pneumatic De-Icers, which equip the leading edges of wing and tail surfaces. The BFG system was chosen for its light weight and simplicity. An electronic timer activates the solenoid in the distributor valve which then pulsates the De-Icer with turbine bleed air.

Ability of the JetStar to operate from small fields, of less than 5000 feet, demands dependability on the runway. Here BFG disk brakes and wheels, of the same type used on big passenger airliners, provide fast, chatter-free stops. A thermally balanced brake design assures constant high torque throughout the life of the lining. And many of the JetStars will roll on BFG fabric-tread jet tires.

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How Local Stops Rank in Traffic

Complete report of daily traffic generation pinpoints cities exposed to "Use It Or Lose It" edict

ONE HUNDRED THIRTEEN cities served by local service airlines in 1960 generated below the minimum number of daily passengers required by the Civil Aeronautics Board's "use it or lose it" policy.

In a report outlining service to cities served by local service carriers, the Board reiterated its stand that a daily average of at least five persons over the twelve months following the initial six months of service must be generated in order for service to be maintained to any local community.

The report was the second in a series of quarterly compilations showing passenger traffic originating at all cities served by the locals. It showed that 28 cities generated fewer than two passengers per day, while three communities —Lubbock, Tex., Plainview, Tex. and Colorado Springs, Colo., all served by Central Airlines—produced under one passenger per day over the year.

Another city, generating under one daily passenger, inaugurated service during 1960—Lemmon, S. Dak., served by Frontier Airlines.

Of the 28 cities with fewer than two daily passengers, three—Frankfort, Ky., served by Piedmont; and Pontiac and Port Huron, Mich., served by North Central—first received service in 1960.

Of 43 additional stops which were new in 1960, 19 fell below the CAB minimum of five daily passengers, although six of these were only a fraction of a passenger below the minimum.

Only Allegheny Airlines had a perfect slate, with no cities below the five-passenger minimum. Next were Pacific Air Lines, with two under-five-a-day cities; Bonanza and Mohawk, with four each; and Lake Central and Piedmont, with five each. Heading the list was Frontier Airlines, with 29 cities below the minimum.

At the other end of the yardstick, Chicago took the lead with a daily average of 1198 passengers apportioned to three local service carriers: North Central (745), Ozark (348) and Lake Central (105). Next was New York/Newark, with 470 for Mohawk and 261 for Allegheny, a total of 731.

The top ten traffic generating cities for the locals ranked as follows: Chicago; New York/Newark; Pittsburgh: 313, split between Allegheny (297) and Lake Central (16); Los Angeles: 306, shared by Pacific (211) and Bonanza (95); Washington, D.C.: 292, split 132 for Allegheny and 160 for Piedmont; Milwaukee: 276, all North Central; San Francisco: 263, all Pacific; Phoenix: 228, with Bonanza (171) and Frontier (57); Minneapolis/St. Paul: 221, all North Central; and Dallas: 213, shared by Central (58) and Trans-Texas (155). ■

Local Traffic Statistics

ALLEGHENY AIRLINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Buffalo, N.Y.	7.94
DuBois-Jefferson County Airport	9.36
Hazleton, Pa.	7.32
New Haven, Conn.*	8.35
Oil City/Franklin, Pa.	8.07
Reading, Pa.*	7.68
Salisbury, Md.	8.32
Trenton, N.J.	8.47
Wilmington, Del.	7.44
11 THROUGH 50	
Altoona, Pa.	19.87
Atlantic City, N.J.	26.10
Baltimore, Md.	20.10
Bridgeport, Conn.	35.47
Cape May, N.J.	12.23
Clearfield/DuBois/Philipsburg and Bellefonte, State College, Pa.	24.70
Cleveland, Ohio	44.73
Detroit, Mich.	37.01
Hagerstown, Md.	12.45
Hartford, Conn./Springfield, Mass.*	29.32
Huntington, W.Va.	23.04
Islip, N.Y.*	15.47
Jamestown, N.Y.	26.79
Johnstown, Pa.	20.60
Lancaster, Pa.	28.21
New London, Conn.*	16.11
Parkersburg, W.Va.	35.97
Providence, R.I.*	49.23
Wheeling, W.Va.	14.73
MORE THAN 50	
Boston, Mass.*	65.22
Bradford, Pa.	65.14

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VERTICAL SPEED INDICATOR
with steady readability in turbulence

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8. Optimum engine failure climb
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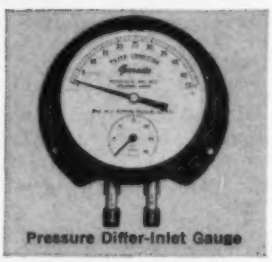
Turbo Fuel Hydrant Cart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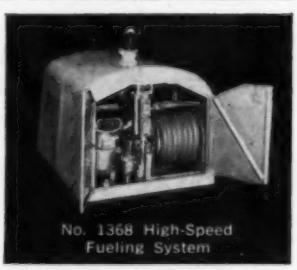
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A continuing program of fuel equipment engineering plus years of pioneering experience in such advanced concepts as ramp hydrant refueling enable Garsite Products, Inc. to offer a complete line of refueling equipment and accessories. Garsite's advanced equipment enables airport operators at small, medium or large airports to gain valuable ground time because of its superior pumping speed and ease of handling. Wide choice of models permits selection of equipment best suited for the particular airport's requirements. Other exclusively Garsite benefits include:

- built-in fuel quality control
- higher safety factor
- rugged construction for long life, low maintenance
- greater flexibility of use, and
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Erie, Pa.	81.3
Harrisburg, Pa.	123.2
New York, N.Y./Newark, N.J.	261.7
Philadelphia, Pa./Camden, N.J.	173.7
Pittsburgh, Pa.	297.76
Scranton/Wilkes-Barre, Pa.	106.5
Washington, D.C.	132.2
Williamsport, Pa.	54.53

* Service Inaugurated In 1960.

BONANZA AIR LINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Apple Valley, Cal.	6.90
Blythe, Cal.	5.02
Cedar City, Utah	4.81
Flagstaff, Ariz.	3.07
Grand Canyon, Ariz.*	6.28
Kingman, Ariz.	3.56
Page, Ariz.	3.74
Prescott, Ariz.	5.82
11 THROUGH 50	
El Centro, Cal.	36.10
Indio/Palm Springs, Cal.	25.38
Reno, Nev.	38.97
Riverside/Ontario, Cal.	50.30
Riverside Airport	20.93
Ontario International Airport	29.37
Salt Lake City, Utah	36.32
San Diego, Cal.	27.84
Santa Ana/Laguna Beach, Cal.	17.58
Yuma, Ariz.	33.37
MORE THAN 50	
Las Vegas, Nev.	130.19
Los Angeles, Cal.	95.53
Phoenix, Ariz.	171.42

* Service Inaugurated In 1960.

CENTRAL AIRLINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Ada, Okla.	2.65
Amarillo, Tex.	7.35
Ardmore, Okla.	2.07
Bartlesville, Okla.	5.78
Borger, Tex.	4.99
Colorado Springs, Colo.	0.88
Denver, Colo.	3.75
Duncan, Okla.	6.00
Enid, Okla.	7.54
Guymon, Okla.	5.43
Harrison, Ark.	5.72
Hot Springs, Ark.	9.00
Lamar, Colo.	2.88
Liberal, Kans.	7.38
Lubbock, Tex.	1.13
McAlester, Okla.	2.68
Muskogee, Okla.	3.23
Paris, Tex.	4.52
Plainview, Tex.	0.9
Ponca City, Okla.	9.26
Sherman/Denison, Tex.	0.93
Stillwater, Okla.	5.68
11 THROUGH 50	
Fayetteville, Ark.	21.4
Ft. Smith, Ark.	33.8
Ft. Worth, Tex.	11.3
Joplin, Mo.	17.5
Lawton/Ft. Sill, Okla.	38.6
Little Rock, Ark.	13.5
Oklahoma City, Okla.	38.9
St. Louis, Mo.	19.2
Topeka, Kans.	20.0
Tulsa, Okla.	18.6
Wichita, Kans.	11.6

Continued on page 94

alouette II

World altitude record for helicopters of all categories (36,037 ft. on June 13th, 1958)

THE BEST HELICOPTERS FOR HIGH-ALTITUDE OPERATIONS

alouette III

Landing on the DEO TIBAA (19,698 ft.), Himalaya, in November 1960, with 2 people on board and 550 lbs. of fuel and equipment

SUD AVIATION

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Continued from page 92

MORE THAN 50

Dallas, Tex.	58.44
Kansas City, Mo.	52.34

FRONTIER AIRLINES, INC.

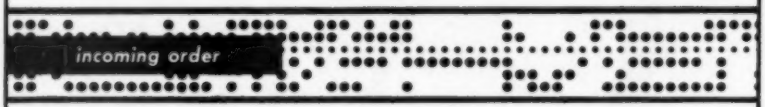
Originating City	Average Daily Passengers
UNDER 10	
Ainsworth, Neb.	1.34
Alamosa, Colo.	8.36
Alliance, Neb.	3.98
Beatrice, Neb.	2.94
Bismarck/Mandan, N.Dak.	5.72
Chadron, Neb.	3.93
Cortez, Colo.	8.04
Dickinson, N.Dak.	2.20
Gallup, N.Mex.	8.39
Glasgow, Mont.	4.09
Glendive, Mont.	1.63
Great Falls, Mont.	5.95
Gunnison, Colo.	3.41
Hastings, Neb.	5.16
Havre, Mont.	2.25
Hot Springs, S.Dak.	1.10
Idaho Falls, Idaho	1.80
Imperial, Neb.	1.07
Jackson, Wyo.	5.10
Kearney, Neb.	4.02
Laramie, Wyo.	6.29
Lemmon, S.Dak.*	0.97
Lewistown, Mont.	1.89
Lovell/Powell/Cody, Wyo.	9.17
Cody Airport	6.78
Powell Airport	2.39
McCook, Neb.	2.53
Miles City, Mont.	2.71
Minot, N. Dak.	5.[illegible]
Moab, Utah	1.[illegible]
Montrose/Delta, Colo.	6.84
Norfolk, Neb.	2.18
Prescott, Ariz.	3.77
Rawlins, Wyo.	1.65
Rock Springs, Wyo.	6.69
Safford, Ariz.	1.95
Sidney, Mont.	2.59
Sidney, Neb.	2.95
Silver City/Hurley, N.Mex.	7.81
St. Joseph, Mo.	5.20
Sterling, Colo.	1.76
Valentine, Neb.	2.54
Vernal, Utah	7.66
Williston, N.Dak	4.04
Winslow, Ariz.	6.86
Wolf Point, Mont.	1.41
Worland, Wyo.	5.75
11 THROUGH 50	
Albuquerque, N.Mex.	44.69
Billings, Mont.	20.54
Casper, Wyo.	14.34
Cheyenne, Wyo.	23.52
Durango, Colo.	18.86
Farmington, N.Mex.	35.55
Flagstaff, Ariz.	15.45
Grand Island, Neb.	12.01
Grand Junction, Colo.	44.87
Kansas City, Mo.	40.20
Lincoln, Neb.	45.17
North Platte, Neb.	11.95
Omaha, Neb.	39.33
Pueblo, Colo.	15.86
Rapid City, S.Dak.	17.48
Riverton/Lander, Wyo.	15.42
Salt Lake City, Utah	43.89
Scottsbluff, Neb.	17.41
Tucson, Ariz.	30.83
MORE THAN 50	
Denver, Colo.	167.84
Phoenix, Ariz.	57.51

* Service inaugurated in 1960.

LAKE CENTRAL AIRLINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Bloomington, Ind.	7.36
Detroit, Mich.	9.30
Dover/New Philadelphia, Ohio	3.40
Erie, Pa.	7.01
Kalamazoo, Mich.	8.66
Marion, Ind.	8.27
Marion, Ohio	2.22
Portsmouth, Ohio	3.42
Richmond, Ind.	5.02
Toledo, Ohio	3.91
Zanesville, Ohio	3.06
11 THROUGH 50	
Buffalo, N.Y.	12.29
Cincinnati, Ohio	24.07
Cleveland, Ohio	35.30
Danville, Ill.	11.85
Dayton and Springfield, Ohio	18.35
Grand Rapids, Mich.	15.87
Kokomo/Logansport/Peru, Ind.	11.60
Lafayette, Ind.	40.39
Lima, Ohio	17.98
Mansfield, Ohio	26.59
Muncie, Ind.	13.40
Pittsburgh, Pa.	16.78
South Bend, Ind.	22.55
Terre Haute, Ind.	21.89
Youngstown, Ohio	26.56
MORE THAN 50	
Chicago, Ill.	105.80
Columbus, Ohio	68.37
Indianapolis, Ind.	67.72

DELIVERY: One Week Sooner



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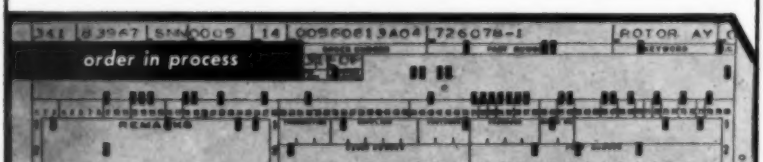

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ESSENTIAL SERVICES TO AVIATION

Airwork CORPORATION
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MOHAWK AIRLINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Glen Falls, N.Y.	5.86
Jamestown, N.Y.*	4.30
Keene, N.H.	1.87
Ogdensburg, N.Y.	9.29
Olean, N.Y.*	3.89
Worcester, Mass.	5.61
11 THROUGH 50	
Albany, N.Y	34.30
Cleveland, Ohio *	18.76
Erie, Pa.	28.05
Poughkeepsie, N.Y.	14.84
Providence, R.I.*	16.39
Springfield/Westfield, Mass.	32.23
Watertown, N.Y.	21.41
White Plains, N.Y.	41.68
MORE THAN 50	
Binghamton/Endicott/Johnson City, N.Y.	169.78
Boston, Mass.	77.37
Buffalo and Niagara Falls, N.Y.	95.07
Detroit, Mich.	57.63
Elmira/Corning, N.Y.	71.74
Ithaca/Cortland, N.Y.	78.57
New York, N.Y./Newark, N.J.	470.01
New York International Airport	120.15
Newark Airport	349.86
Rochester, N.Y.	66.35
Sycracuse, N.Y.	172.56
Utica/Rome, N.Y.	169.50

* Service inaugurated in 1960.

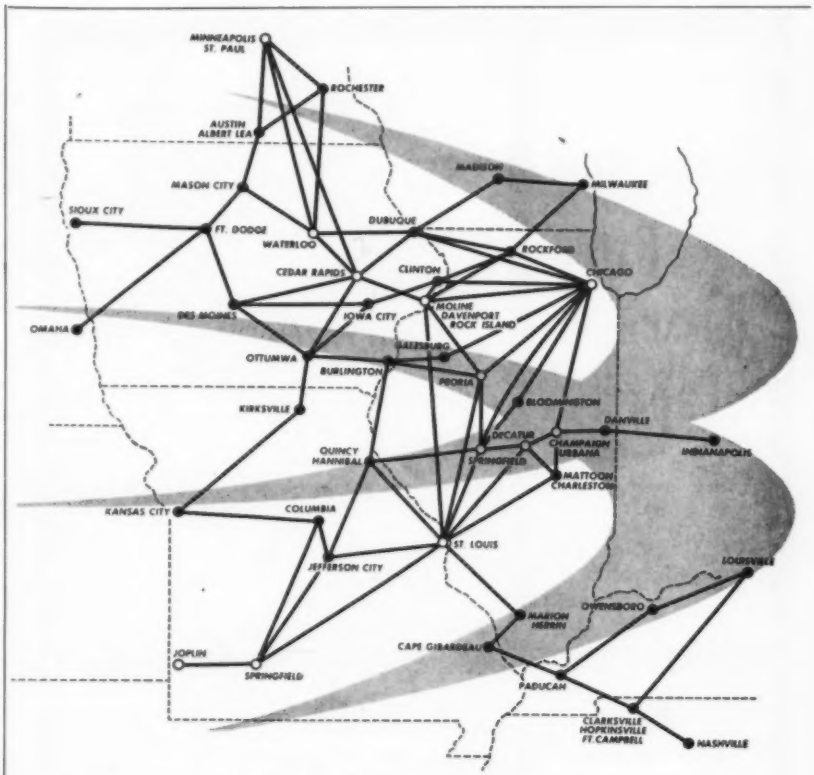
NORTH CENTRAL AIRLINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Alpena, Mich.*	4.06
Ashland, Wis.	5.20
Bemidji, Minn.	8.50
Brainerd, Minn.	8.00
Brookings, S.Dak.	5.02
Cadillac/Reed City, Mich.*	3.16
Clintonville, Wis.	4.27
Devils Lake, N.Dak.	2.50
Fairmont, Minn.	5.46
Flint, Mich.*	2.94
Ironwood, Mich.	6.79
Land O'Lakes, Wis.	6.57
Manitowoc, Wis.	8.72
Mankato, Minn.	5.16
Marinette, Wis./Menominee, Mich.	9.61
Mitchell, S.Dak.	7.64
Norfolk, Neb.	7.14
Pellston, Mich.*	8.45
Pierre, S.Dak.	6.61
Port Arthur/Fort William, Ontario, Canada*	4.16
Pontiac, Mich.*	1.39
Port Huron, Mich.*	1.84
Rapid City, S.Dak.	9.50
Rockford, Ill.	4.04
Saginaw/Bay City/Midland, Mich.*	9.61
Sault Sainte Marie, Mich.	4.14
Sioux City, Iowa	9.88
Spearfish, S. Dak.	1.54
Thief River Falls, Minn.	4.92
Winona, Minn.	5.69
Worthington, Minn.	5.58
Yankton, S.Dak.	6.09
11 THROUGH 50	
Aberdeen, S.Dak.	22.15
Appleton, Wis.	10.17
Battle Creek, Mich.	46.96
Beloit/Janesville, Wis.	27.09
Benton Harbon/St. Joseph, Mich.*	16.64
Bismarck/Mandan, N.Dak.	13.17
Chisholm/Hibbing, Minn.	13.60
Eau Claire, Wis.	20.63
Escanaba, Mich.	13.52
Fargo, N.Dak.	12.71
Grand Forks, N.Dak.	15.01
Hancock/Houghton, Mich.	15.13
Huron, S.Dak.	12.58
International Falls, Minn.	13.38
Iron Mountain, Mich.	14.30
Jackson, Mich.	18.99
La Crosse, Wis.	20.46
Lansing, Mich.	22.63
Marquette, Mich.	20.97
Minot, N.Dak.	16.19
Muskegon, Mich.*	13.77
Omaha, Neb.	42.13
Rhinelander, Wis.	14.25
Sioux Falls, S.Dak.	29.21
Traverse City, Mich.*	19.90
Watertown, S.Dak.	10.43
Wausau, Wis.	41.39
Wisconsin Rapids/Stevens Point, Wis.	18.08
MORE THAN 50	
Chicago, Ill.	745.08
Detroit, Mich.	140.27
Duluth, Minn./Superior, Wis.	109.15
Grand Rapids, Mich.	51.29
Green Bay, Wis.	94.73
Kalamazoo, Mich.	69.00
Madison, Wis.	112.28
Milwaukee, Wis.	276.52
Minneapolis/St. Paul, Minn.	221.20
Oshkosh, Wis.	70.77
South Bend, Ind.	58.16

* Service inaugurated in 1960.

OZARK AIR LINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Austin/Albert Lea, Minn.*	4.16
Bloomington, Ill.	9.36



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General Offices: Lambert Field, St. Louis 34, Missouri

Cape Girardeau, Mo.	8.55
Clarksville, Tenn./Ft. Campbell/Hopkinsville, Ky.	8.09
Clinton, Iowa	8.98
Danville, Ill.	3.66
Galesburg, Ill.*	6.54
Kirksville, Mo.*	2.84
Madison, Wis.	6.13
Marion/Herrin, Ill.	9.58
Mattoon/Charleston, Ill.	5.45
Nashville, Tenn.	4.68
Omaha, Neb.	9.11
Owensboro, Ky.	3.97
Rochester, Minn.	8.42
Wichita, Kan.	2.98

11 THROUGH 50

Burlington, Iowa	12.25
Cedar Rapids, Iowa	41.21
Columbia, Mo.	21.36
Decatur, Ill.	42.74
Des Moines, Iowa	37.48
Dubuque, Iowa	18.10
Ft. Dodge, Iowa	16.49
Indianapolis, Ind.	11.83
Iowa City, Iowa	13.24
Jefferson City, Mo.	13.17
Joplin, Mo.	18.57
Kansas City, Mo.	36.60
Louisville, Ky.	39.06
Mason City, Iowa	22.64
Milwaukee, Wis.	15.30
Minneapolis/St. Paul, Minn.	47.83
Ottumwa, Iowa	10.46
Paducah, Ky.	30.20
Quincy, Ill./Hannibal, Mo.	22.87
Rockford, Ill.	44.86
Sioux City, Iowa	12.95
Springfield, Mo.	26.84
Waterloo, Iowa	19.87

MORE THAN 50

Champaign/Urbana, Ill.	50.71
Chicago, Ill.	348.93
Davenport, Iowa/Moline, Ill.	56.57
Peoria, Ill.	114.46
St. Louis, Mo.	189.64
Springfield, Ill.	77.05

* Service inaugurated in 1960.

PACIFIC AIR LINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Marysville/Yuba City, Calif.	5.26
Medford, Oreg.	5.32
Red Bluff, Calif.	2.83
Santa Rosa, Calif.	8.96
Stockton, Calif.	6.64
Ukiah, Calif.	2.36
11 THROUGH 50	
Chico, Calif.	16.25
Crescent City, Calif.	11.46
Oakland, Calif.	12.86
Oxnard/Ventura, Calif.	14.20
Palmdale/Lancaster, Calif.	10.91
Portland, Oreg.	16.31
Redding, Calif.	26.66
San Luis Obispo/Paso Robles, Calif	12.60
Santa Barbara, Calif.	44.05
Santa Maria, Calif.	38.17
MORE THAN 50	
Bakersfield, Calif.	52.25
Burbank, Calif.	53.81
Eureka/Arcata, Calif.	87.87
Las Vegas, Nev.	61.57
Los Angeles, Calif.	211.44
Monterey, Calif.	101.51
Sacramento, Calif.	58.15
San Francisco, Calif.	263.05
San Jose, Calif.	109.02

PIEDMONT AVIATION, INC.

Originating City	Average Daily Passengers
UNDER 10	
Beckley, W.Va.	6.96
Danville, Va.	2.04
Hickory, N.C.	7.31
Frankfort (Capital City, Ky.)	1.00
London/Corbin, Ky.	3.84
Morehead City/Beaufort, N.C.*	2.83
New Burn, N.C.	8.51
Newport News/Hampton, Va.	9.43
Southern Pines/Pinehurst/Aberdeen, N.C.*	3.07
11 THROUGH 50	
Asheville, N.C.	25.18
Ashland, Ky./Huntington, W.Va.	34.67
Charlottesville, Va.	37.89
Columbus, Ohio	34.07
Fayetteville, N.C.	35.10
Greensboro/High Point, N.C.	22.67
Kingston, N.C.	14.17
Knoxville, Tenn.	23.42
Lexington (Blue Grass Field), Ky.	38.73
Lynchburg, Va.	46.78
Myrtle Beach, S.C.*	17.77
Norfolk, Va.	30.95
Parkersburg, W.Va./Marietta, Ohio	18.77
Princeton/Bluefield, W.Va.	19.73
Raleigh/Durham, N.C.	39.32
Staunton, Va.*	22.13
Wilmington, N.C.	25.23
Winston-Salem, N.C.	25.86
MORE THAN 50	
Bristol, Va.-Tenn./Kingsport/Johnston City, Tenn.	106.67
Charleston, W.Va.	56.10

Continued on page 99

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Continued from page 96

Charlotte, N.C.	67.66
Cincinnati, Ohio	114.60
Louisville, Ky.	63.58
Richmond, Va.	54.32
Roanoke, Va.	131.86
Washington, D.C.	160.77

* Service inaugurated in 1960.

SOUTHERN AIRWAYS, INC.

Originating City	Average Daily Passengers
UNDER 10	
Athens, Ga.	8.69
Charlotte, N.C.	4.34
Chattanooga, Tenn.*	3.32
Decatur, Ala.*	5.82
Gadsden, Ala.	8.75
Greenville, S.C.	4.99
Greenwood, Miss.	4.66
Greenwood, S.C.	3.24
Hattiesburg, Miss.*	2.91
Jackson, Tenn.*	6.93
Laurel, Miss.	5.65
Meridian, Miss.*	4.66
Mobile, Ala.	6.65
Moultrie, Ga.	5.70
Natchez, Miss.	8.60
Selma, Ala.*	2.34
Shelbyville/Tullahoma, Tenn.*	0.83
Spartanburg, S.C.	1.88
Tupelo, Miss.	6.88
University/Oxford, Miss	5.18
Vicksburg, Miss.	3.81
11 THROUGH 50	
Albany, Ga.	11.12
Anniston, Ala.	11.80
Baton Rouge, La.	15.42
Birmingham, Ala.	10.85
Briston, Va-Tenn/Kingsport/Johnson City, Tenn.*	17.39
Columbus, Ga.	20.63
Columbus, Miss.	17.82
Dothan, Ala.	19.61
Eglin Air Force Base, Fla.	32.23
Florence/Sheffield/Tuscumbia, Ala.*	14.59
Greenville, Miss.	18.16
Gulfport, Biloxi, Miss.	14.55
Huntsville, Ala.	39.20
Jackson, Miss.	24.39
Jacksonville, Fla.	12.25
Knoxville, Tenn.*	26.07
Monroe, La.	28.15
Nashville, Tenn.*	12.44
Panama City, Fla.	16.16
Tuscaloosa, Ala.	11.98
Valdosta, Ga.	10.27
MORE THAN 50	
Atlanta, Ga.	187.04
Memphis, Tenn.	69.44
New Orleans, La.	52.48

* Service inaugurated in 1960.

TRANS-TEXAS AIRWAYS

Originating City	Average Daily Passengers
UNDER 10	
Brownwood, Tex.	4.37
Camden, Ark.	2.29
El Paso, Tex.	3.69
Galveston, Tex.	2.84
Lufkin, Tex.	5.66
Magnolia, Ark.	1.69
Marshall, Tex.	2.80
Midland/Odessa, Tex.	5.59
Monroe, La.	8.09
Natchez, Miss.	3.50
Pecos, Tex.	1.48
Victoria, Tex.	9.14
11 THROUGH 50	
Alexandria, La.	11.32

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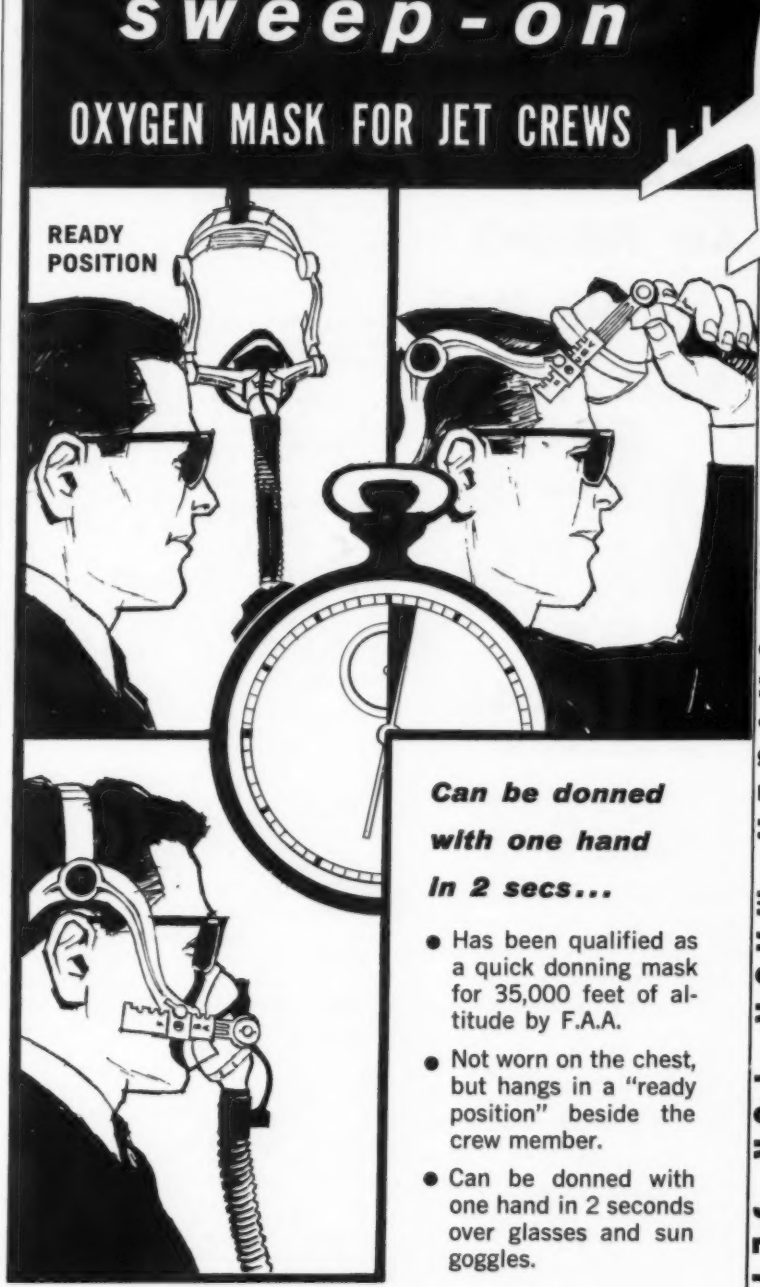
OXYGEN MASK FOR JET CREWS



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PARSONS
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CENTRAL AIRLINES

Austin, Tex.	21.51
Corpus Chrisi, Tex.	16.73
El Dorado, Ark.	11.81
Fort Worth, Tex.	23.98
Harlingen/San Benito, Tex.	25.13
Hot Springs, Ark.	15.82
Jackson, Miss.	12.41
Lafayette, La.	13.64
Lake Charles, La.	19.53
Laredo, Tex.	14.01
Little Rock, Ark.	30.48
Longview/Kilgore/Gladewater, Tex.	21.89
Mission/McAllen/Edinburg, Tex.	31.70
Memphis, Tenn.	43.07
New Orleans, La.	17.11
Pine Bluff, Ark.	10.17
San Angelo, Tex.	19.56
San Antonio, Tex.	49.39
Shreveport, La.	22.42
Texarkana, Tex.-Ark.	17.18
Tyler, Tex.	25.00

MORE THAN 50

Beaumont/Port Arthur, Tex.	52.31
Dallas, Tex.	155.72
Houston, Tex.	91.59

WEST COAST AIRLINES, INC.

Originating City	Average Daily Passengers
UNDER 10	
Albany/Corvallis, Oreg.	5.39
Baker, Oreg.	2.99
Bellingham, Wash.	3.77
Bend/Redmond, Oreg.	4.43
Burley/Rupert, Idaho	7.63
Burns, Oreg.	1.42
Coeur d'Alene, Idaho	5.36
Cut Bank/Shelby, Mont.	1.78
Great Falls, Mont.	2.68
Kalispell, Mont.	6.23
Lakeview, Oreg.	1.91
Logan, Utah	1.84
McCall, Idaho	1.15
Oakland, Calif.	4.74
Olympia, Wash.	3.82
Omak, Wash.	3.46
Ontario, Oreg/Payette, Idaho	2.74
Pendelton, Oreg.	3.05
Roseburg, Oreg.	7.92
Salem, Oreg.	3.21
Sun Valley/Hailey/Ketchum, Idaho*	4.14
11 THROUGH 50	
Aberdeen/Hoquiam, Wash.	15.40
Astoria, Oreg.	10.97
Calgary, Alberta, Canada*	15.53
Ephrata/Moses Lake, Wash.	11.19
Eugene, Oreg.	33.28
Idaho Falls, Idaho	19.15
Klamath Falls, Oreg.	30.32
Lewiston, Idaho/Clarkston, Wash.	35.19
Medford, Oreg.	19.92
North Bend/Coos Bay, Oreg.	29.48
Pasco/Kennewick/Richland, Wash.	48.83
Pocatello, Idaho	19.59
Port Angeles, Wash.	19.19
Pullman, Wash./Moscow, Idaho	17.61
Sacramento, Calif.	20.70
Salt Lake City, Utah	34.91
San Francisco, Calif.	46.14
Spokane, Wash.	49.04
Twin Falls, Idaho	36.29
Walla Walla, Wash.	39.13
Wenatchee, Wash.	15.88
MORE THAN 50	
Boise, Idaho	73.79
Portland, Oreg.	139.70
Seattle, Wash.	148.06
Yakima, Wash.	61.03

* Service Inaugurated in 1960.

LOCAL AIRLINE STATISTICS

The U.S. local airlines are moving far afield from the situation of only a few years ago when they were basically a group of one-plane (DC-3) operators.

Today the locals are operating no fewer than five different types of equipment, some direct duplicates of twin-engine piston models which are still piling up an impressive number of hours in trunk services.

The following pages tabulate by type of equipment the results achieved by the locals during 1960 in a wide range of operating areas such as load factors, utilization, flight speeds, operating and maintenance costs.

LOAD FACTOR

Airline	*Load Factor*	*% Rev. to Avail. Ton-Miles*
CONVAIR 240		
MOH	47.4	48.2
CONVAIR 340/440		
AAA	36.75	39.73
FAL	44.60	43.70
MOH	44.2	37.1
NOR	41.97	40.71
CONVAIR 540		
AAA	44.63	37.35
DOUGLAS DC-3		
AAA	45.75	48.69
BAL	31.88	34.22
CEN	39.20	35.80
FAL	35.60	42.20
LCA	38.50	42.10
MOH	41.5	40.6
NOR	43.56	45.55
OZA	39.47	43.71
PAC	38.70	39.70
PAI	44.32	45.07
TTA	38.70	NA
FAIRCHILD F-27		
BAL	41.07	42.10
OZA	43.93	45.96
PAC	52.10	52.30
PAI	46.12	48.02

Airline	Load Factor	% Rev. to Avail. Ton-Miles
MARTIN 2-0-2/4-0-4		
AAA	44.50	44.42
PAC	48.7	46.4
	49.5*	35.9
*4-0-4		
INTRA HAWAIIAN		
DC-3		
Aloha	51.3	48.6
HAL	NA	NA
F-27		
Aloha	61.6	53.4
CONVAIR 340/440		
HAL	NA	NA
ALASKAN		
DC-3		
PNA	31.00	52.00
DC-4		
ASA	28.00	NA
DC-6		
ASA	69.00	NA
C-46		
ASA	28.00	NA
L 749		
PNA	50.00	63.00

OPERATING COST

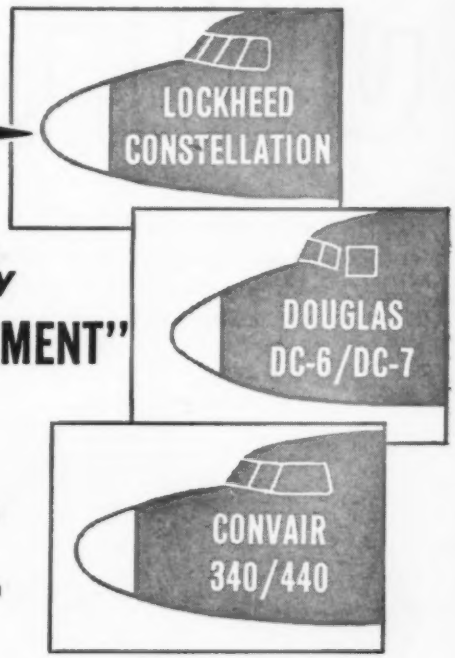
Airline	Cents per Plane-Mile 1960	1959	1958
Convair 340/440			
AAA	96.91	.....	.....
FAL	93.20	111.00	.....
NOR	101.04	95.10	.....
Convair 540			
AAA	91.23	111.63	.....
DOUGLAS DC-3			
AAA	70.03	65.72	73.00
BAL	69.64	59.65	61.10
CEN	68.61	54.42	64.50
FAL	61.30	66.00	.....
LCA	60.85	57.41	.....
NOR	61.31	58.10	55.40
OZA	56.89	64.00	67.50
PAC	77.21	60.37	.....
PAI	66.00	59.59	61.80
SOU	56.99	.....	.....
TTA	49.93	49.18	58.80
FAIRCHILD F-27			
BAL	81.79	80.69	.....
OZA	98.93	.....	.....
PAC	99.25	89.55	.....
PAI	100.00	101.02	102.6
WCA	.....	118.82	72.5
MARTIN 2-0-2			
AAA	99.27	94.83	102.0
PAC	88.28	.....	.....
HELICOPTERS			
BELL 47J			
CHA	...		27.80
NYA	53.40		52.80

Airline	Cents per Plane-Mile 1960	1959	1958
SIKORSKY S-55			
LAA	55.70		64.40
SIKORSKY S-58			
CHA	48.00		40.50
VERTOL 44B			
NYA	53.40		52.80
INTRA HAWAIIAN			
DC-3			
Aloha	114.00	82.00	.....
HAL	.....	69.59	59.50

Airline	Cents per Plane-Mile 1960	1959	1958
CONVAIR 340			
HAL	.....	97.88	96.02
FAIRCHILD F-27			
Aloha	96.00	75.00	.....
ALASKAN			
DC-3			
PNA	89.00	82.00	80.00
DC-4			
ASA	133.00	131.00	89.00
DC-6			
ASA	121.00	139.00	.....

Continued on page 103

AIRLINE OPERATORS of



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GENERAL OFFICES: ATLANTA AIRPORT, ATLANTA, GEORGIA

Continued from page 101

Airline	*Cents per Plane-Mile 1960*	*1959*	*1958*
C-46			
ASA	123.00	117.00	.....
LOCKHEED 749			
PNA	152.00	155.00	146.00
HELICOPTERS			
BELL 47			
CHA	84.00	84.00	.....
NYA	158.00	206.00	.....
SIKORSKY S-55			
LAA	109.17	98.00	121.00
SIKORSKY S-58			
CHA	209.00	211.00	343.00
VERTOL 44B			
NYA	398.00	420.00	439.00

MAINTENANCE COSTS

Airline	*Dollars Per Flight Hour 1960*	*1959*	*1958*
CONVAIR 240			
MOH	$ 98.99	$ 56.01	$ 54.88
CONVAIR 340/440			
AAA	$ 56.41*	.....	.....
FAL	59.03	$ 82.97	.....
MOH	53.40	56.01	54.88
NOR	82.18	62.24	.....
CONVAIR 540			
AAA	$ 67.84*	$ 81.18	.....
DOUGLAS DC-3			
AAA	$ 22.35*	$ 21.62	$ 21.43
BAL	30.56	25.06	34.33
CEN	37.29	.....	33.87
FAL	21.15	20.19	.....
LCA	22.38	18.89	.....
MOH	41.83	24.98	22.74
NOR	22.09	20.14	20.28
OZA	22.48	22.31	24.98
PAC	.....	23.12	.....
PAI	27.56	22.00	32.00
SOU	20.26	.....	.....
TTA	.....	22.45	26.30
FAIRCHILD F-27			
BAL	$ 59.08	$ 57.62	.....
OZA	76.23	.....	.....
PAC	.....	60.38	.....
PAI	71.34	66.00	78.00
WCA	.....	.....	.....
MARTIN 2-0-2			
AAA	$ 49.79*	$ 46.02	$ 40.43

*Preliminary.

INTER HAWAIIAN			
DC-3			
Aloha	$156.08	$ 30.00	.....
HAL	.....	27.26	.....
CONVAIR 340			
HAL	.....	$ 39.55	$ 47.12
ALASKAN			
DOUGLAS DC-3			
PNA	$ 43.05	$ 34.00	$ 39.97
DOUGLAS DC-4			
ASA	$ 76.85	.....	.....

Airline	*Dollars Per Flight Hour 1960*	*1959*	*1958*
DOUGLAS DC-6			
ASA	$ 61.30	.....	.....
LOCKHEED 749			
PNA	$122.07	$135.41	$126.37
CURTISS C-46			
ASA	$ 57.60	.....	.....
HELICOPTERS			
SIKORSKY S-55			
LAA	$ 33.32	$ 31.00	$ 45.58
SIKORSKY S-58			
CHA	$ 72.54	$ 66.27	$ 47.00
VERTOL 44B			
NYA	$ 76.27	$ 77.25	$ 82.55

UTILIZATION

Airline	*Hrs./Day*
CONVAIR 240	
MOH	5:46
CONVAIR 340/440	
AAA	4:54
FAL	5:01
NOR	6:09
MOH	6:50
CONVAIR 540	
AAA	4:38
DOUGLAS DC-3	
AAA	5:22
BAL	2:59
CEN	5:01
FAL	5:35
LCA	6:04
MOH	4:35
NOR	7:24
OZA	6:13
PAC	2:49
PAI	4:36
TTA	5:36
FAIRCHILD F-27	
BAL	6:32
OZA	6:01
PAC	5:44
PAI	6:02
MARTIN 2-0-2	
AAA	4:58
PAC	5:03
(404)	4:22
INTRA HAWAIIAN	
DOUGLAS DC-3	
Aloha	1:58
HAL	NA
CONVAIR 340	
HAL	NA
FAIRCHILD F-27	
Aloha	4:54
ALASKAN	
DOUGLAS DC-3	
PNA	4:17
DOUGLAS DC-4	
ASA	4:06
DOUGLAS DC-6	
ASA	9:44

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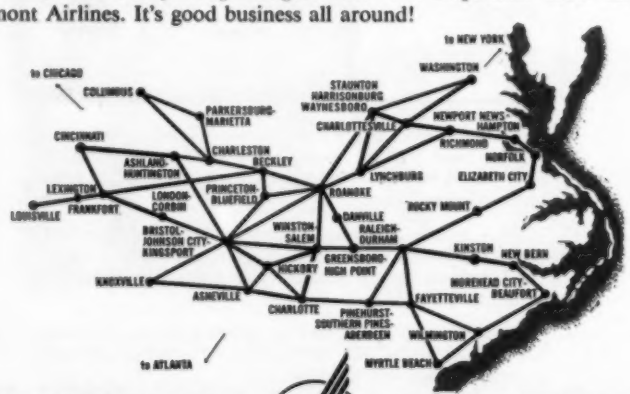


PIEDMONT AIRLINES

Home Office & Operations Base, Smith Reynolds Airport

WINSTON-SALEM, NORTH CAROLINA

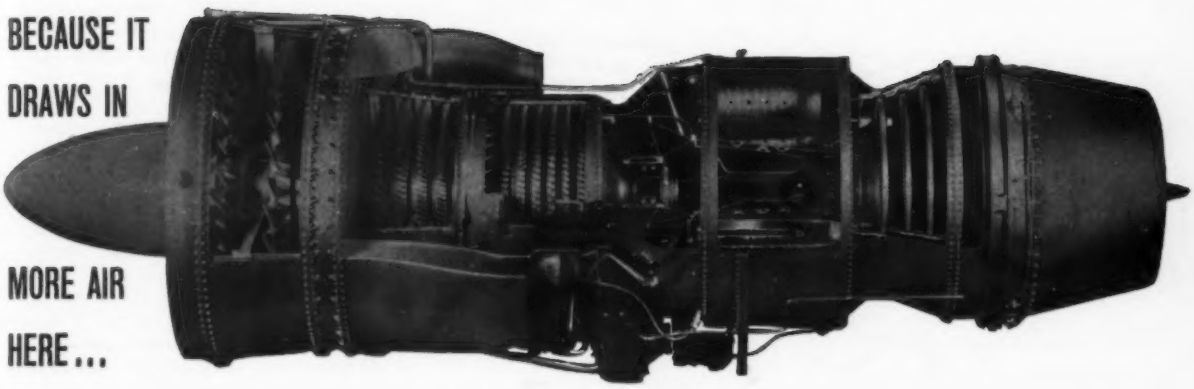
Airline	*Hrs./Day*
LOCKHEED 749	
PNA	7:10
CURTISS C-46	
ASA	1:49
HELICOPTERS	
SIKORSKY S-55	
LAA	3:29
SIKORSKY S-58	
CHA	3:54
VERTOL 44B	
NYA	4:34

SPEEDS

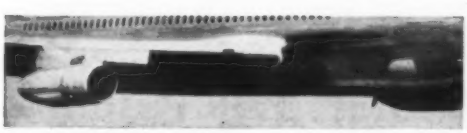
Airline	*Flight Hours*	*Rev. Miles*	*Avg. Speed*
CONVAIR 240			
MOH	16,021	2,833,668	177
CONVAIR 340/440			
AAA	9,940	1,796,738	182
FAL	9,021	1,765,981	196
MOH	11,869	2,062,745	174
NOR	12,058	2,313,084	193
CONVAIR 540			
AAA	2,996	722,875	242
DOUGLAS DC-3			
AAA	18,408	2,454,401	133
BAL	7,065	1,070,226	152
CEN	27,483	4,028,960	147
FAL	50,993	7,587,265	149
LCA	26,584	3,692,584	139
MOH	11,538	1,494,232	128
NOR	86,727	12,185,747	140
OZA	54,447	7,794,079	143
PAC	7,687	1,009,855	130
PAI	27,560	3,970,238	144
SOU	39,107	5,669,267	142
TTA	51,482	8,109,965	158
FAIRCHILD F-27			
BAL	17,094	3,607,911	211
OZA	6,584	1,278,091	194
PAC	12,581	2,542,012	202
PAI	17,319	3,304,672	191
MARTIN 2-0-2			
AAA	21,057	3,556,889	169
PAC	8,976	1,603,691	179
(4-0-4)	8,232	1,497,601	182
INTRA HAWAIIAN			
DOUGLAS DC-3			
ALOHA	4,297	583,288	136
HAL	.....	.....	...
FAIRCHILD F-27			
ALOHA	9,310	1,854,814	199
ALASKAN			
DOUGLAS DC-3			
PNA	4,708	670,426	142
DOUGLAS DC-4			
ASA	3,007	573,430	191
DOUGLAS DC-6			
ASA	8,892	2,321,630	262
LOCKHEED 749			
PNA	15,229	3,731,021	246

Continued on page 106

BECAUSE IT DRAWS IN MORE AIR HERE...



THE PRATT & WHITNEY AIRCRAFT JT3D TURBOFAN GENERATES UP TO 42% GREATER THRUST



In simplest terms, this is how the Pratt & Whitney Aircraft JT3D turbofan has improved on the efficiency of the conventional turbojet engine. The JT3D is the logical extension of the turbojet's design simplicity, flexibility, and unprecedented reliability, proved in over 12,000,000 hours of flight. The JT3D's increased thrust—42 per cent greater on take-off than its straight jet counterpart—permits use of shorter runways, gives quicker climb to cruise altitudes, and faster cruise speeds. At the same time, its substantially lower fuel consumption reduces operating costs. Ten leading airlines have already ordered Pratt & Whitney Aircraft JT3D turbofan engines.

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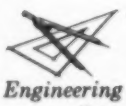

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Continued from page 104

Airline	*Flight Hours*	*Rev. Miles*	*Avg. Speed*
CURTISS C-46			
ASA	1,812	309,559	170
HELICOPTERS			
BELL 47J			
NYA	431	25,240	54.4
SIKORSKY S-55			
LAA	9,026	637,698	70
SIKORSKY S-58			
CHA	10,194	911,391	89
VERTOL 44B			
NYA	8,171	467,626	58.5

ENGINE OVERHAUL

(Overhaul Periods & Costs)

Airline	*Model*	*Time (Hours)*	*Cost Per Overhaul*
TURBINE ENGINES			
ROLLS ROYCE DART			
BAL	528	2200	$6,701
OZA	511	1800	NA
PAC	528	1400	10,000
PAI	511	2000	16,000
Aloha	511	1200	14,000
NAPIER ELAND			
AAA	504A	500	NA
PISTON ENGINES			
P&W R1830			
AAA	—92	1400	3,000
CEN	SIC3G	1200	
FAL	—92	1300	2,710
LCA	—90D	1400	
OZA		1400	NA
PAC		1300	2,250
PAI	—92	1500	3,800
TTA	—92	1300	NA
Aloha	—92	1300	6,000
Pac. North.	—90D	1300	4,200

(Overhaul Periods & Costs)

Airline	*Model*	*Time (Hours)*	*Cost Per Overhaul*
P&W R2800			
AAA	—77	1300	5,500
	CB16	1500	14,013
FAL	CB16	1500	10,700
MOH	CA3	1600	11,200
NOR	CB16	1200	10,000
PAC	CB16	1500	7,500
	CA18	1400	6,000
TTA	—83AM4A	....	.....
WRIGHT 1820			
NOR	G202A	1300	2,475
HELICOPTERS			
LYCOMING			
CHA	VO435	600	1,479
NYA	VO435	600	3,000
P&W R1340			
LAA	ANI	1000	4,140
WRIGHT 1820			
CHA	C9H	600	8,309
NYA	C9H	500	7,500

LOCAL PILOTS

Airline	*Pilots*	*Attendants*
AAA	197	96
BAL	61	27
CEN	84	36
FAL	167	93
LCA	104	47
MOH	141	65
NOR	289	154
OZA	155	80
PAC	94	49
PAI	135	54
SOU	151	75
TTA	129	67
INTRA HAWAIIAN		
ALOHA	34	18
HAL	NA	NA
ALASKAN		
ASA	59	31
PNA	54(a)	45

(a) Also 19 flight engineers.

ENGINEERING/MAINTENANCE EMPLOYMENT

Airline	Total Maint. Incl. Inspection	Engineering	Total Productive	Total Overhead	Line Maintenance	Aircraft Overhaul	Engine Overhaul	Instrument Overhaul	Accessory Overhaul	Communications & Electronics	Other
AAA	376	5	329	47	205	67	0	10	15	20	12
BAL	98	0	98	0	16	79	0	7	3	11	0
CEN	72	0	65	7	30	6	1	0	3	10	15
FAL	245	5	228	22	61	48	21	6	14	21	79
LCA	98	1	83	15	30	0	0	0	2	17	0
MOH	251	3	225	29	91	132	0	3	9	12	4
NOR	542	10	474	68	190	41	23	(a)	20	66	134
OZA	241	3	226	18	197	10	0	0	12	32	0
PAC	198	2	179	21	113	12	30	4	13	22	6
PAI	324	5	276	48	95	66	0	0	40	34	41
SOU	214	14	184	0	87	57	0	0	27	13	0
TTA	154	2	..	13	76	21	0	0	0	24	0
(a) included in comm/electronics											
HELICOPTERS											
CHA	83	0	0	19	45	11	0	0	0	2	6
LAA	61	2	58	6	(b)	43	0	0	13	2	3
NYA	41	0	31	10	23	0	0	0	5	3	4
HAWAIIAN											
Aloha	139	0	116	23	49	(c)	0	2	20	6	27
ALASKAN											
ASA	148	0	125	23	24	56	19	2	11	13	23
PNA	277	0	216	61	54	0	0	0	5	16	0

(b) Includes line maintenance; (c) Includes aircraft overhaul

'Copters Up 39% in Passengers

THE SCHEDULED U.S. HELICOPTER operators, on the eve of their big move into turbine operations, passed the ½-million passenger a year mark during 1960 for the first time in their eight-year history.

Transporting 520,000 passengers, a 39.5% increase over 1959, the three operators exceeded $3 million in passenger revenues for a yield of about $5.93 per passenger.

Freight revenues for New York Airways were up 3.8% (only NYA hauls freight), express climbed 59% and mail 7.8%. Total operating expenses, however, were up sharply (17.8%) to bring the operating profit for the year to only $220.2 million compared with $649.6 million in 1959.

Averaging load factors from 48% on Chicago Helicopter Airways to 55.7% for Los Angeles Airways, the trio of operators flew 31,358 hours and about 2.2 million miles. Since 1952 when passenger operations got underway in earnest, they have transported 1.36 million passengers.

Although Los Angeles Airways officially launched the turbine helicopter era in December with the introduction of a 10-passenger Sikorsky S-62, the big event will come in the late summer of this year when all three carriers receive their big turbine 'copters.

New York Airways will get five 25-passenger Boeing/Vertol 107s with another five to follow in 1962. Chicago will receive four 30-passenger Sikorsky S-61s and Los Angeles three with the latter receiving an additional two in 1962.

For helicopter operations, this new breed of aircraft is expected to play a role much like that of the DC-3 in early airline operations. Economics will be vastly improved. Traffic generating potential, even if only partially realized, should rewrite the record book of helicopter statistics.

CHA, which accounts for about 59% of all operations, expects its passenger total to leap from 309,107 to 390,000 this year. By 1962, when it has all of its Vertol 107s, NYA expects to top a million passengers. Los Angeles says it will hit between 500,000 and 730,000 by 1962 and from 730,000 to a million in 1963.

With this outlook of explosive growth, the three pioneering airlines seemingly have paved the way for others to join their ranks. The Civil Aeronautics Board, in the past gun-shy of Capitol Hill criticism of helicopter subsidies, is undertaking a full-dress investigation of helicopter needs in the Washington-Baltimore-Dulles Airport complex. Although approval of such an operation is considered a foregone conclusion, the economic emphasis which the Board is expected to place on its study in this area is expected to have far-reaching impact in the expansion of transport helicopter services throughout the U.S.

And the record written by New York, Chicago and Los Angeles helicopter operators with their new turbines during 1961 will go a long way toward shaping not only CAB opinion but the entire future of the helicopter transport industry. ■

HELICOPTER REVENUES, 1960 vs. 1959
(thousands of dollars)

	Passenger		Freight		Express		Mail		Opn. Revenues		Opn. Expenses		Operating Income	
	1960	1959	1960	1959	1960	1959	1960	1959	1960	1959	1960	1959	1960	1959
Chicago	$1819.2	$1207.0	....	....	....	....	$ 36.5	$ 37.1	$3438.4	$3008.2	$3387.7	$2504.5	$ 50.6	$503.7
Los Angeles ...	228.8	245.8	....	....	$171.9	$105.7	151.7	141.0	1682.4	1422.9	1440.1	1344.0	242.4	78.9
New York	1039.7	856.9	$40.8	$39.3	38.5	26.2	56.7	48.9	3480.7	3329.3	3553.5	3262.3	—72.8	67.0
Total	$3087.7	$2309.7	$40.8	$39.3	$210.4	$131.9	$244.9	$227.0	$8601.5	$7760.4	$8381.3	$7110.8	$220.2	$649.6

Transport Helicopter Specifications

With the big expansion still to come in the helicopter airline business, upcoming turbine models will play a key role. Here are the major types on the market, with all significant features:

Aircraft	No. of Seats	Engines	Overall Length	Overall Height	Empty Weight	Gross Weight	Cruising Speed (mph)	Range (miles)	Basic Price
Rotodyne (Kaman Aircraft Corp)	65	4 Fairey tip jets 2 RR Tynes, 5250 shp ea.	104'	23'2"	35,564	60,000	200	735	$1,700,000
Sikorsky S-61	30	2 DT-58-110s 1250 shp*	72'5"	15'4"	9,270	18,700	136	250	605,000
Sikorsky S-62	10-12	CT-58-100 1050 shp*	62'3"	14'2"	4,790	7,500	109	270	276,000
Sikorsky S-58	20	Wright R-1820-84 1275 hp	65'10"	15'11"	7,630	13,000	101	190	267,000
Sikorsky S-55	12	P&W R-1340 600 hp	62'3"	15'3"	4,950	7,200	85	405	170,000
Vertol 107 (airline configuration)	25	2 CT-58-110s 1250 shp ea.	83'4"	16'10"	10,425	18,450	150	200	657,000
Vertol 44	20	Wright R-1820-103 1275 hp	86'4"	15'5"	8,990	14,350	101	350	out of production
Bell 204B	10	Lycoming T-53-L9 1100 shp	53'	14'6"	4,318	8,500	120	218	285,000
Sud Fralon	20-24	3 Turmo III-Cs 1000 shp ea.	48'10"	15'5"	9,920	17,640	...	...	.....

*Derated to 730 hp.

TAXI OPERATIONS aren't all "small town." Port of New York Authority photo shows typical service at Newark.

Air Taxi Fleet Doubles in Five Years

NATC membership now at 180 with 40% of the fleet comprising multi-engine aircraft. In '55 it was only 20%.

By NORMAN LARSON*

*President, National Air Taxi Conference

PERHAPS because the average air taxi operator describes his business as a long, hard struggle, the industry and the operators often are underrated.

Members of the National Air Taxi Conference, however, have shown a healthy increase in operations during the last five years (see chart), and the future of the air taxi industry looks bright.

Conference membership has grown from 89 to 180 in the last five years. As of March 1, 1961, members were operating 427 aircraft, 40 per cent of them multi-engine; five years ago the fleet consisted of 203 aircraft, less than 20 per cent of which were multi-engine.

The expansion of the market for air taxi service, as reflected by the industry's growth, is due to many factors: Increasing competition, which makes *time* a dollars and cents item for the salesman and executive; the shift of population to the suburbs; the movement of industry itself out of the city centers; the fact that major military bases and similar installations are out-of-bounds for the scheduled air carriers.

Why save time only to lose it? Certainly no jet traveler is content to fly from coast to coast in 4 hours and 30 minutes, from New York to Dallas in 3 hours and 20 minutes, and from Miami to Detroit in 2 hours and 40 minutes only to spend the same amount of time struggling to reach his final destination 50 or 100 miles distant by ground transportation.

One of the challenges of the jet age is to cover this "to" and "from" distance in such a way as to give real meaning to jet speeds. The air traveler wants to "fly all the way," and is fast becoming aware that air taxi allows him to do so, and that the NATC's "Flying Kangaroo" insignia represents high standards and an excellent safety record.

But although business is good, much work lies ahead if the air taxi industry is to exploit fully the market available.

One of our greatest needs is advertising, both local and

national. In order to realize the benefits of connecting air taxi-airline transportation, the traveler must be aware of its availability and must request it not only in an area where the operator and the service is known to him but also at the point of origin of trips.

Ideally, NATC should be represented at every one of the 571 airports served by the scheduled carriers. Local contact between the individual NATC member and the airline representatives should be continuous and should lead to genuine and complete cooperation in a manner mutually satisfactory to the passenger, the airlines, and the air taxi operator. There is also a need for greater cooperation between NATC members, particularly in the matter of referring trips to one another.

Greater use of taxis

Cooperation between the airlines and the air taxi operators is generally very good. We do feel that air taxi is a segment of the national air transport system which could and should be utilized more, but we realize that the airlines' concern naturally is with selling their own service and handling their own problems.

A number of NATC members make reservations daily for passengers on the airlines. Many of these passengers are connecting by car or train and are not even using air taxi. The result is that the local airline people know the NATC member and return his favors by recommending that member for air taxi service. In other locations, however, the delayed airline passenger has to ask for air taxi service on his own instead of being referred to it by the local airline agent.

There are many other things which air taxi operators need to do if they are to take advantage of the business available to them.

We need to promote group travel: package plans for vacation, fishing and hunting trips. Since so many vacation, hunting and fishing spots are located at off-line points, a worthwhile idea might be to overprint airline posters for distribution at connecting airline and vacation points.

Some NATC members are investigating the possibility of scheduled air taxi flights to resort areas, particularly to ski resorts during the winter season. It appears that there may be sufficient traffic to justify weekly schedules during the season.

An air taxi clearing house would help to promote air taxi, to generate business, and to reduce per-passenger fare. NATC is giving serious thought to setting up one such clearing house on an experimental basis, a proposal which was considered three years ago but which was thought premature at that time.

The handling of gate and ramp space for air taxi operators has shown marked improvement recently at most major terminals. We feel that as requests for connecting air taxi service increase these facilities and procedures will continue to improve.

The handling of traffic at major terminal airports continues to be a big problem for air taxi operators. We feel that separate short parallel runways would help to eliminate ground delays, increase safety, and speed both air taxi and airline traffic.

To turn to matters in the immediate future of air taxi: We are still operating under CAR Part 42, and are awaiting the issuance of FAA's new Part 47 which will govern air taxi and commercial operations. NATC participated in the original drafting of Part 47. But during the change in FAA's rulemaking function in 1958 the proposal was postponed and rewritten.

A hope for realism

The protests received from members on the last draft release, 60-13, were such that NATC opposed the part in its entirety and asked that we again be allowed to participate in working up an agreeable and reasonable set of rules. We are hopeful that the final version will be more realistic for the varied types and sizes of operations.

(Editor's note: An FAA spokesman told *AIRLIFT* that FAA now expects to issue the final version of Part 47 in "June or July." Extensive revisions are being made to the draft proposal, the spokesman added.)

The growing trend toward greater use of twin-engine equipment will, we feel, continue, perhaps at an even greater rate. We also believe that the next few years will see an increase in night and IFR flying and a large increase

AIR TAXI STATISTICS—1955-1960

Revenue Trips

	Total	Passenger	Cargo
Oct. '59-Sept. '60	46,059	41,147	5,878
Oct. '58-Sept. '59	40,622	37,419	3,544
Oct. '57-Sept. '58	34,008	29,747	4,529
Oct. '56-Sept. '57	37,368	34,985	3,031
Oct. '55-Sept. '56	26,546	23,549	3,459
Oct. '54-Sept. '55	27,135	21,810	5,134

Revenue Miles

	Total	Passenger	Cargo
Oct. '59-Sept. '60	11,404,809	29,009,085	684,837
Oct. '58-Sept. '59	7,755,204	17,722,368	512,545
Oct. '57-Sept. '58	5,198,619	8,663,493	319,051
Oct. '56-Sept. '57	6,502,461	9,045,959	353,430
Oct. '55-Sept. '56	5,923,002	7,491,242	277,235
Oct. '54-Sept. '55	5,622,401	6,388,603	285,569

Passengers Carried

	Total	Airlines	Other
Oct. '59-Sept. '60	81,126	28,417	54,575
Oct. '58-Sept. '59	69,402	26,855	44,938
Oct. '57-Sept. '58	54,543	18,330	38,075
Oct. '56-Sept. '57	97,540	18,952	79,490
Oct. '55-Sept. '56	87,319	11,968	76,477
Oct. '54-Sept. '55	79,534	11,906	67,684

AIR TAXI EQUIPMENT

Aero Commander	16
Alouette II	2
Beech	120
Single engine— 65	
Twin engine — 55	
Bell	11
Bellanca	3
Cessna	131
Single engine—106	
Twin engine — 25	
DeHavilland (Dove)	5
Grumman (Goose)	5
Lockheed (10 & 12)	6
Mooney	3
Piper	124
Single engine— 64	
Twin engine — 60	

Background on NATC

The National Air Taxi Conference, founded in 1950, is a cooperative, nonprofit organization formed for the purpose of "raising the standards of air taxi operations and obtaining the approval, confidence and acceptance of the scheduled airlines and the traveling public.

Members are required to have at least two air taxi aircraft, along with adequate ground facilities for passengers. They are also required to meet certain maintenance standards, and to pledge themselves to a code of ethics and operating practices.

NATC officers for 1961 are Norman Larson of the Norman Larson Co., Van Nuys, Calif., president; Carl E. M. Hempel of Hempel Helicopter and Air Taxi, St. Louis, first vice president; and William Frank Kelsey, Kemp and Kelsey Airservice Inc., Salt Lake City, second vice president.

IDENTITY, one of air taxi's big problems, is amply solved with a counter display such as this (left) at Idaho Falls' new terminal.

in the numbers and types of specialized services. In addition we think that as air taxi volume increases, rates will drop accordingly.

We give credit to our high standards and our excellent safety record for our success in working out an agreement with Tele-Trip (Mutual of Omaha) under which passengers may purchase flight insurance covering both air taxi and the continuing scheduled airline flight. Eighty-four NATC member licensees now offer this flight insurance.

We in NATC realize that much work lies ahead in advertising and selling air taxi. By constantly upgrading our service, and by taking one step at a time, we will make a reservation system and an airline-air taxi ticketing system a reality. Just when we will be ready we cannot say—but the future of air taxi looks good for both the fixed-wing and the helicopter operator. ■

Late Results: U.S. Airline Finances—1960

Final results of 1960 operations for U.S. international airlines, local service, Hawaiian and Alaskan services produced these trends in revenues and expenses:

International: Operating revenues climbed 15.4% from $565 million in '59 to $652 million in '60 as expenses were held to a 10.9% increase. Standout was TWA which hiked its operating revenues by $26.2 million (35%) while expenses rose only $1.3 million (1.5%). Pan American increased revenues $55.8 million for a 15.7% gain over 1959 and its expenses were up $47.9 million or close to 14%.

Local Service: Discounting Allegheny, whose financial results were not filed with CAB by deadline, the local industry showed a gain of $19.3 million in revenues or 17.3% over 1959 as expenses were up $18.1 million or 16.3%. The result, again exclusive of AAA, showed a climb in operating income for the year of $1.2 million over the $651,729 recorded in 1959.

Hawaiian: Although only Aloha's results were filed by CAB deadline, that carrier showed a 34% increase in operating revenues against a 46% climb in expenses to produce a net operating loss of $228,928. In 1959 it reported a $181,691 operating income.

Alaska: Excluding the operations of Northern Consolidated, the only non-reporting carrier in this group, the Alaskan airlines recorded a 9.1% increase in operating revenues.

Expenses were held to about a 1.9% rise to produce an operating income of $2.2 million for the seven airlines on record. In 1959 these same airlines had an operating income of only $84,468. Northern Consolidated, the missing carrier, represents about 9% of Alaskan revenue operations.

Editor's Note: Late filing of 1960 financial data postponed its availability until immediately before presstime. To make this special edition complete, the statistics are presented here (Tables, p. 111) with brief interpretation. For U.S. domestic trunk results, see page 56; helicopter services, page 107. →

Scheduled Airline Revenues & Expenditures, 1959-1960

LOCAL SERVICE	Passenger Revenues 1960	Passenger Revenues 1959	Freight Revenues 1960	Freight Revenues 1959	Express Revenues 1960	Express Revenues 1959	U.S. Mail Revenues 1960	U.S. Mail Revenues 1959	Total Operating Revenues 1960	Total Operating Revenues 1959	Total Operating Expenses 1960	Total Operating Expenses 1959	Total Operating Income 1960	Total Operating Income 1959
Allegheny	N.A.	$ 7,039,190	.....	$ 230,029	.....	$ 123,544	.....	$ 142,108	.....	$ 11,473,756	.....	$ 11,381,306	.....	$ 92,450
Bonanza	$ 4,543,442	3,814,884	$ 70,572	60,393	$ 32,194	22,026	$ 50,175	43,503	$ 8,226,774	6,528,673	$ 7,569,224	6,358,017	$ 657,550	170,656
Central	2,406,260	2,261,393	92,914	91,202	29,888	25,258	82,882	90,857	5,984,580	5,319,151	5,676,164	5,409,084	308,416	—89,933
Frontier	6,352,584	5,318,671	322,792	329,272	56,421	57,939	179,059	153,402	13,760,113	12,165,032	13,227,107	11,735,216	533,006	429,816
Lake Central	2,855,461	2,643,409	.....	.....	115,401	99,227	70,963	62,126	4,819,672	4,637,449	4,780,168	4,431,195	39,504	206,254
Mohawk	9,229,143	8,256,574	153,787	164,976	131,043	104,316	145,807	107,335	13,189,912	10,867,767	13,378,127	10,653,412	—188,215	214,355
North Central	12,660,869	11,388,135	293,511	116,667	286,626	216,725	372,394	315,429	20,609,032	18,339,891	21,357,231	18,162,572	—748,199	177,319
Ozark	7,609,285	6,794,425	246,329	220,018	172,903	103,367	167,473	143,422	12,305,139	10,437,472	12,319,626	10,429,443	—14,487	8,029
Pacific	6,186,267	5,914,854	56,240	46,588	48,499	55,049	149,993	134,919	11,073,701	9,232,660	11,389,146	8,996,396	—315,445	236,264
Piedmont	7,118,073	7,367,429	123,530	108,951	95,811	78,997	119,622	116,345	12,424,699	11,207,252	11,782,874	11,733,751	641,825	—526,499
Southern	3,587,326	3,247,748	103,455	100,852	63,900	53,147	138,930	105,179	7,032,259	6,138,405	7,575,937	6,085,321	—543,678	53,084
Trans Texas	5,038,907	4,438,880	204,728	181,733	75,829	55,439	179,689	144,083	9,140,586	7,967,160	8,620,799	7,638,138	519,787	329,022
West Coast	6,207,248	4,603,789	112,229	76,433	37,046	25,143	115,916	69,039	12,017,973	8,507,533	11,039,857	9,064,171	978,116	—556,638
Totals	$73,794,865	$73,089,381	$1,780,087	$1,727,114	$1,145,561	$1,020,177	$1,772,903	$1,627,747	$130,584,440	$122,822,201	$128,716,260	$122,078,022	$1,868,180	$744,179
INTRA HAWAIIAN														
Aloha	$ 4,664,833	$3,524,975	$82,011	$ 67,505	.....	.....	$25,861	$21,528	$4,979,072	$3,733,681	$5,208,000	$ 3,551,990	$—228,928	$181,691
Hawaiian	N.A.	5,951,173	N.A.	764,686	.....	.....	N.A.	39,854	N.A.	7,865,538	N.A.	7,718,543	N.A.	146,995
Totals	$ 4,664,833	$9,476,148	$82,011	$832,191	.....	.....	$25,861	$61,382	$4,979,072	$11,599,219	$5,208,000	$11,270,533	$—228,928	$328,686
ALASKA														
Alaska	$ 2,531,680	$ 2,620,280	$ 619,874	$ 518,065	$ 4,898	$11,919	$701,054	$467,835	$9,013,355	$7,960,045	$ 8,360,592	$ 8,175,199	$ 652,763	$—215,154
Alaska Coastal	1,052,756	962,310	114,827	93,222	23,143	.....	120,410	112,638	2,234,486	2,033,856	2,156,397	2,044,898	78,089	—11,042
Cordova	183,026	147,645	124,223	75,246	.....	.....	107,469	118,498	1,247,842	1,190,763	1,220,326	1,162,133	27,516	28,630
Ellis	718,287	643,947	68,573	69,949	.....	.....	58,378	61,715	1,336,833	1,281,551	1,315,966	1,189,607	20,867	91,944
Nor. Consolidated	N.A.	853,017	N.A.	367,921	.....	.....	N.A.	494,749	N.A.	2,950,129	N.A.	2,890,740	N.A.	59,389
Pacific Northern	7,221,319	7,015,239	1,153,700	937,770	33,164	28,159	906,700	817,224	11,597,433	11,128,198	10,960,579	10,865,748	636,854	262,450
Reeve	1,687,015	1,233,759	432,181	356,153	.....	.....	496,825	423,759	2,908,349	2,415,113	2,434,016	2,204,318	474,333	210,795
Wien	1,137,575	1,127,384	381,917	335,683	.....	.....	694,304	590,109	5,082,785	4,622,293	4,724,544	4,905,448	358,241	—283,155
Totals	$14,531,658	$14,603,581	$2,895,295	$2,754,009	$71,205	$40,078	$3,085,140	$3,286,527	$33,421,083	$33,581,948	$31,172,420	$33,438,091	$2,248,663	$143,857
ALL CARGO														
Aaxico	.....	.....	.....	.....	.....	.....	.....	.....	$ 6,054,620	$ 8,258,210	$ 5,251,192	$ 7,059,622	$ 803,428	$ 1,198,588
Flying Tiger	.....	.....	$12,733,646	$14,873,811	$210,698	$219,917	$ 206,888	$ 194,448	26,407,117	29,352,313	27,533,591	28,438,457	—1,126,474	913,856
Riddle	.....	.....	4,248,485	5,099,592	125,969	107,633	100,963	37,110	6,505,292	7,658,990	8,332,567	9,193,626	—1,827,275	—1,534,636
Slick	.....	.....	.....	.....	.....	.....	.....	.....	12,000,214	9,667,246	10,885,544	8,658,933	1,114,670	1,008,313
Aerovias Sud	.....	.....	N.A.	1,304,635	N.A.	.....	N.A.	.....	N.A.	1,536,994	N.A.	1,532,937	N.A.	4,057
Seaboard & Western	.....	.....	6,733,296	7,238,058	.....	.....	4,200,974	2,945,416	16,647,988	14,656,139	21,182,437	19,253,685	—4,534,449	—4,597,546
Totals	.....	.....	$23,715,427	$28,794,404	$336,667	$356,388	$4,508,825	$3,192,816	$67,615,231	$71,129,892	$73,185,331	$74,137,260	$—5,570,100	$—3,007,368
INTERNATIONAL														
American	$ 5,809,806	$ 5,750,343	$ 617,627	$ 567,229	$ 3,663	$ 2,249	$ 42,878	$ 43,803	$ 6,877,252	$ 6,765,987	$ 7,527,482	$ 6,875,511	$ —650,230	$ —109,524
Braniff	9,233,480	6,843,935	605,396	491,077	.....	.....	247,422	153,753	10,799,609	8,034,457	11,497,381	8,216,163	—697,772	—181,706
Caribair	3,219,742	2,720,896	142,133	96,172	.....	.....	34,223	31,435	3,507,783	2,983,218	3,196,255	2,482,738	311,528	500,480
Delta	2,975,431	4,717,271	94,833	131,885	.....	.....	37,272	54,368	3,284,184	5,108,853	4,165,589	5,389,382	—881,405	—280,529
Eastern	27,936,754	24,337,151	649,585	409,235	.....	.....	569,758	357,398	30,008,094	26,406,486	29,495,235	22,907,072	512,859	3,499,414
San Juan	20,633,220	17,344,141	529,377	324,436	.....	.....	483,860	272,515	22,271,794	18,875,923	22,053,932	16,395,339	217,862	2,480,584
Bermuda	2,288,930	2,142,818	24,225	14,191	.....	.....	31,053	30,917	2,446,029	2,364,566	1,890,300	1,856,415	555,729	508,151
Mexico	5,014,604	4,850,192	95,983	70,608	.....	.....	54,845	53,966	5,290,271	5,165,997	5,551,003	4,655,318	—260,732	510,679
National	1,524,893	3,429,902	28,634	131,498	4,442	24,976	11,586	39,840	1,752,073	3,758,280	1,963,448	3,975,670	—211,375	—217,390
Northwest	22,095,797	24,457,309	4,189,975	4,801,679	52,598	57,161	7,170,110	7,771,331	35,986,047	38,822,539	35,048,585	33,602,252	937,462	5,220,287
Panagra	14,759,442	14,025,242	2,467,922	2,104,483	.....	.....	665,271	557,796	19,998,190	18,612,429	20,995,096	19,406,608	—996,906	—794,179
Pan American	318,588,126	273,579,685	41,147,925	36,744,700	14,457	.....	24,201,585	19,374,381	410,783,860	354,980,390	387,683,917	339,851,792	23,099,943	15,128,598
Non-Divisional	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	(2306)	44,418	2,306	—44,418
Latin America	76,912,209	75,507,229	13,349,915	13,773,581	.....	.....	2,561,867	2,428,035	101,459,754	98,129,026	112,674,484	104,638,270	—11,214,730	—6,509,244
Atlantic	150,002,292	130,840,341	15,811,575	12,725,634	.....	.....	10,714,032	9,045,544	186,366,934	161,471,390	169,774,000	144,002,080	16,592,934	17,469,310
Pacific	87,273,734	63,944,915	11,490,854	9,811,014	12,240	.....	10,721,624	7,708,839	117,729,149	91,323,776	99,056,845	85,766,825	18,672,304	5,556,951
Alaska	4,399,891	3,287,200	495,581	434,471	2,217	.....	204,062	191,963	5,228,023	4,056,198	6,180,894	5,400,199	—952,871	—1,344,001
Trans Caribbean	N.A.	3,856,614	N.A.	585,446	N.A.	74,235	N.A.	.....	N.A.	4,811,145	N.A.	4,890,779	N.A.	—79,634
TWA	77,587,921	50,199,664	5,709,895	3,857,722	.....	.....	7,959,866	6,141,961	100,958,035	74,685,390	83,861,584	82,500,781	17,096,451	—7,815,391
United	21,695,013	14,999,359	432,918	283,634	45,654	8,804	811,579	582,635	23,265,893	16,106,280	17,202,021	13,079,954	6,063,872	3,026,326
Western	4,580,004	4,181,253	83,451	48,920	.....	.....	37,412	44,312	4,810,016	4,384,134	4,564,199	4,170,289	245,817	213,845
Totals	$510,006,409	$433,098,624	$56,170,294	$50,253,680	$120,814	$167,425	$41,788,962	$35,153,013	$652,031,036	$565,459,588	$607,200,792	$547,348,991	$44,830,244	$18,110,597

LETTERS

Continued from page 22

> than scheduled air carriers, and handle a wide variety of aviation activity including business flying, commercial flying, etc."

I seriously question whether the plan has provided us with the airport "system" as intended and spelled out in Section 3 of the Federal Airport Act of 1946, as amended. It reads in part as follows (again copied from the National Airport Plan, 1959):

> "(a) The (Administrator) is hereby authorized and directed to prepare, and thereafter at least three months prior to the close of each fiscal year, to revise a National Airport Plan for the development of public airports in the United States, including the Territory of Hawaii and Puerto Rico and the Virgin Islands.
>
> Such plan shall specify in *terms of general location* and *type of development* the projects considered by the (Administrator) to be necessary to provide a system of public airports adequate to anticipate and meet the needs of civil aeronautics, which projects shall include all types of airport development eligible for federal aid under this act and *shall not be limited to any classes or categories* of public airports—."

Before going further, some specific examples must be shown where it would appear that the intent of the Act is not being carried out.

Example 1: the airport needs of the Appleton and Oshkosh, Wisconsin area. Although the needs of this area could best be served by a single, well equipped airport, federal planning and federal aid participation continues along the lines of expanding the Oshkosh facility which has not the adequate clear zones or the centralized location that are necessary to provide safe, efficient and economical service to the area. Two well known airport consultant and engineering firms have recommended a joint airport. The distance between cities is less than 25 miles.

Example 2: the Grand Rapids and Muskegon, Michigan area. Both of these cities are presently planning to build new airports. The new Grand Rapids Airport is estimated to cost $6 million. It is being built approximately ten miles east-southeast of Grand Rapids. The distance between the two cities is approximately thirty miles, yet this new airport is being built in a direction *opposite* to Muskegon.

A joint airport located about mid-point between these two cities would generate five non-stop flights a day to New York City, based on present traffic figures, with corresponding improvement in air service to other points. Present service relies on connections, or at least stops, at major traffic hubs to fill up the plane.

Such an airport would also serve the traffic needs of Grand Haven and Holland, Mich., which are larger than some cities receiving air service individually. Construction on this airport will begin this spring under the federal aid to airports program, with 50% federal funds, 25% state and 25% local.

One more quote from the Federal Airport Plan Book for 1959, under Section II, Planning Guides: "The economy of an airline flight depends upon revenues and costs per mile; the longer the flight, the greater its profit. En route stops are a liability if added revenues fail to exceed landing costs or if lost time depresses the originating markets. Usually, marginal plane loads will stop while heavy loads will be carried direct to destination.

"Where a city generates traffic needing a number of daily schedules for a far away place, an airline will commit long haul aircraft to its service. When one of these long haul schedules can board a self sufficient load which does not require a profit additive from en route stops, the airlines will send it the entire distance on a non-stop flight. The size of the aircraft to be used and the non-stop distances they fly are what determine runway dimensions and requirements."

The foregoing considerations have quite an effect on the subsidy required for local carriers. There are many like situations in our country where duplicate facilities are being constructed while one good and adequate airport would serve the aviation needs of the area more effectively.

As an airline pilot, I find too many airports with terminals costing a half million dollars or more while lack of a fifteen hundred dollar lighting aid prevents me from getting the passengers *to* that terminal. More objectivity is needed in the direction of the National Airports Plan and its incorporation in the development of a national transportation *system*, which should be well coordinated with other means of public transportation.

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EQUIPMENT

New orders—Aerolineas Argentinas has ordered nine Avro 748 twin Dart-powered, 48-passenger shorthaul transports. Order is valued at $2.5 million and brings A. V. Roe's total 748 orders to 24. First Aerolineas delivery is slated for October.

Avensa, Venezuelan airline, has increased its commitment for Convair 880Ms to two, bringing Convair within three of the 100 mark in jet sales . . . Braniff has ordered another 720-027 for use on U.S. routes . . . Current BOAC order for 35 VC-10s and 10 Super VC-10s may be revised in favor of the longer-range jet.

Negotiations on a new contract with Vickers-Armstrongs (Aircraft) are presently underway . . . Avensa has purchased a second Convair 880M for the jointly-held Venezuelan international airline Viasa. First aircraft will be delivered in May and the second in September.

United Arab Airways has purchased three DC-6s from SAS. The aircraft will be used on Damascus-Cairo and Damascus-Kuwait routes . . . Republic of Ghana has ordered six Whirlwind Series 3 helicopters for Air Force use from Westland Aircraft, Ltd.

Resales—American has sold two DC-6s to Nord-Air, a charter airline with headquarters in Copenhagen . . . Middle East Airlines will sell four of its seven Viscounts, one to Central African Airways.

New models—Nord-Aviation reported that the prototype Max Holste MH 260 has completed ground vibration tests and resumed flight testing. The first production model will fly in September or October. Production aircraft will be delivered in 1962.

Certification—Canadair estimates that the type certificate for the CL-44 will be issued by early June. Certification program is now in the final stages of demonstration to Canada's Department of Transport.

Short-medium jets—British Aircraft Corp. has decided to concentrate its efforts on the short-medium range BAC-111 jet transport and abandon plans for the proposed VC-11 medium-range jet. The BAC-111 is a development of the Hunting 107 twin-jet transport and would be powered by two Rolls-Royce RB163 (Spey) engines of 9450 lbs. thrust.

Caravelle rollout—Sud Aviation is slated to roll out its first U.S.-engined Caravelle 7 sometime in January, 1962. Powered by G.E. CJ805-23C aft-fan turbojets, the aircraft is being built on speculation. It would be available to U.S. carriers by October.

Lease—Nelco, Inc., a Delaware company jointly owned by Aviation Financial Services, Inc. and Equilease Corp., a subsidiary of Electric Auto-Lite Co., has taken over financing of six Northeast 880s. Lease is for seven years with renewal purchase options.

MANAGEMENT

Business—The New Zealand government has been offered $5.6 million for the purchase of TEAL by R. M. Ansett, head of Ansett Transport Industries, Ld. The offer is contingent on the Australian government selling its 40% interest in TEAL to the New Zealand government.

As an inducement to New Zealand, Ansett has undertaken to increase the flow of Australian tourists into New Zealand from the present figure of 16,000 a year to 128,000. Ansett would raise most of the $5.6 million in New Zealand and the airline would remain substantially New Zealand in ownership but Australian in management.

REYNOLDS

H. Don Reynolds, until recently asst. v.p.-traffic and sales administration for American Airlines, joined the International Air Transport Assn. as traffic director effective April 17. He fills the post vacated last year by J. W. S. Brancker.

PERSONNEL

Changes and promotions—E. H. van der Beughel, executive VP and deputy president of KLM, will succeed I. A. Aler as president when the latter retires this month. F. Besancon, senior VP (technical), will become deputy president . . . H. Aeppli has been promoted to VP-traffic and sales of Swissair following the retirement of L. Ambord. A. J. Rome has been named v.p.-Atlantic Division, Riddle Airlines, with headquarters in Washington, D.C. . . . Erle Cocke, Jr., formerly VP-civic affairs of Delta Air Lines, has resigned to accept an as yet unannounced position with government.

Frank C. McDermott has resigned as exec. dir. of the Air Traffic Control Assn. for personal reasons.

Loyd Eden, assistant treasurer, Braniff Airways, has been elected president of the Airlines Clearing House . . . D. Walter Swan, former deputy assistant Postmaster General, has been named VP-assistant to the president of Frontier Airlines.

C. W. Moore, executive VP of Chicago Helicopter Airways, has been elected a director of ATA, replacing CHA president J. S. Gleason, Jr., who was named administrator of veterans affairs . . . Capt. Alden C. Packard, deputy director of FAA's Bureau of Research and Development, is retiring from his post and from the Navy, effective July 1. He plans to enter private industry.

FINANCE

Subsidy for Hawaii—CAB said it intends to establish temporary mail rates for Aloha Airlines and Hawaiian Airlines of $29,880 per month from Feb. 2 through July 31, including subsidy and service mail pay. The carriers requested subsidy after suffering losses due to the recession and aggravated by a sugar strike.

Aloha had requested an annual subsidy rate of $780,141 and Hawaiian had asked for $461,700. The Board said this amount was unwarranted and

scheduled a "priority" investigation of the carriers' needs.

Stock offering—Frontier Airlines has filed with the Securities and Exchange Commission seeking registration of 250,000 outstanding shares of common stock to be offered for public sale. Frontier has 937,528 outstanding shares.

New financing—Southern Airways has concluded a $1.5 million financing arrangement with Chase Manhattan Bank, including $300,000 of debentures which were immediately subscribed. The financing will be used principally for new equipment.

ENGINEERING

Better brakes—United Air Lines will soon install liquid-cooled brakes on its fleet of Boeing 720s marking first use of the improved brakes on an airline transport. The new system, a development of B. F. Goodrich Aviation Products Division, operates 1500° cooler on the brake lining faces than conventional brakes. The new system entails virtually no weight penalty.

AIRPORTS

Insurance—Houston International Airport has given Tele-Trip Co., Inc., a flat-rate contract reportedly similar to the agreement with FAA for Washington National and Dulles International Airports. The rate is roughly 25% of gross annual sales. Tele-Trip now charges 2½ cents per $1000 worth of insurance, a drop of one cent from previous rates.

Tele-Trip says it has also applied for the lower rates at Newark, Midway, Salt Lake City, Milwaukee and Chattanooga, Tenn., airports, asserting willingness to adopt the lower rate wherever the concession charge is 25% or less.

FAA

New R&D head—Joseph D. Blatt, deputy director of Facilities and Material, has been named acting director of the Bureau of Research and Development, following the reassignment of James L. Anast to "liaison duties" with the new R&D study task force. Anast later will join the Paris staff of a U.S. firm.

TRAFFIC/SALES

East meets west—United Air Lines, which next month becomes the biggest airline in the free world, has signed an interline agreement with Aeroflot, Russia's giant government airline, providing for issuance of a single ticket for passengers or cargo over each other's routes. Aeroflot now connects with free world carriers at London, Paris, Copenhagen, Brussels, Amsterdam and Stockholm.

LABOR

Incentive for pilots—Southern Airways has inaugurated an incentive pay plan for pilots which officials say is

Continued on page 151

ON-TIME BOXSCORE

January, 1961

Airline Ranking		On time to 15 min. late
TRUNKS		
1	Western	83.5%
2	Continental	83.4
3	Braniff	81.2
4	United	76.7
5	American	75.3
6	Eastern	74.5
7	TWA	73.1
8	Capital	71.3
9	Northeast	67.7
10	Delta	65.0
11	National	60.3
12	Northwest	No report
707 & DC-8		
1	Continental	87.6%
2	American	70.1
3	TWA	66.8
4	United	66.0
5	Braniff	65.4
6	Western	64.9
7	Delta	60.6
8	Eastern	59.2
9	National	49.5
10	Northeast	33.3
11	Northwest	No report
720		
1	American	79.4%
2	Capital	73.7
3	United	71.8
880		
1	Delta	44.1%
2	Northeast	8.5
ELECTRA		
1	Braniff	92.3%
2	Western	82.5
3	Eastern	75.8
4	American	67.4
5	National	60.8
6	Northwest	No report
LOCAL SERVICE		
1	Frontier	88.0%
2	Piedmont	87.2
3	West Coast	84.0
4	Central	84.0
5	North Central	82.8
6	Bonanza	81.2
7	Southern	73.7
8	Ozark	73.4
9	Allegheny	69.4
10	Pacific	67.2
11	Lake Central	60.9
12	Mohawk	54.6
13	Trans-Texas	44.8

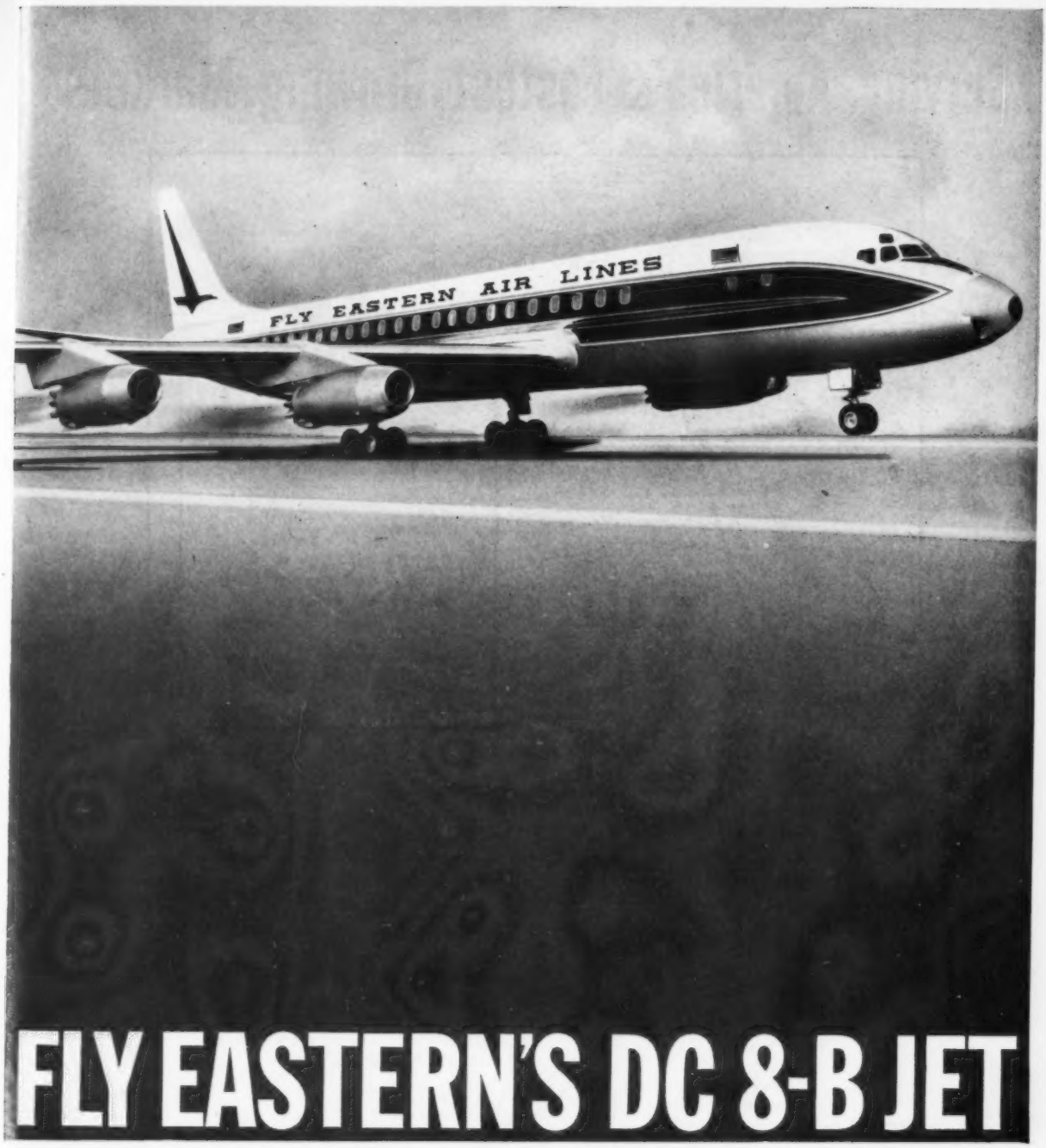
Source: AIRLIFT research.

ANCHORAGE
HOMER
CORDOVA

JUNEAU
KENAI
YAKUTAT

KETCHIKAN
KODIAK
KING SALMON

PACIFIC NORTHERN AIRLINES
The Alaska Flag Line. 405 WASHINGTON BLDG., SEATTLE, WASH.



FLY EASTERN'S DC 8-B JET

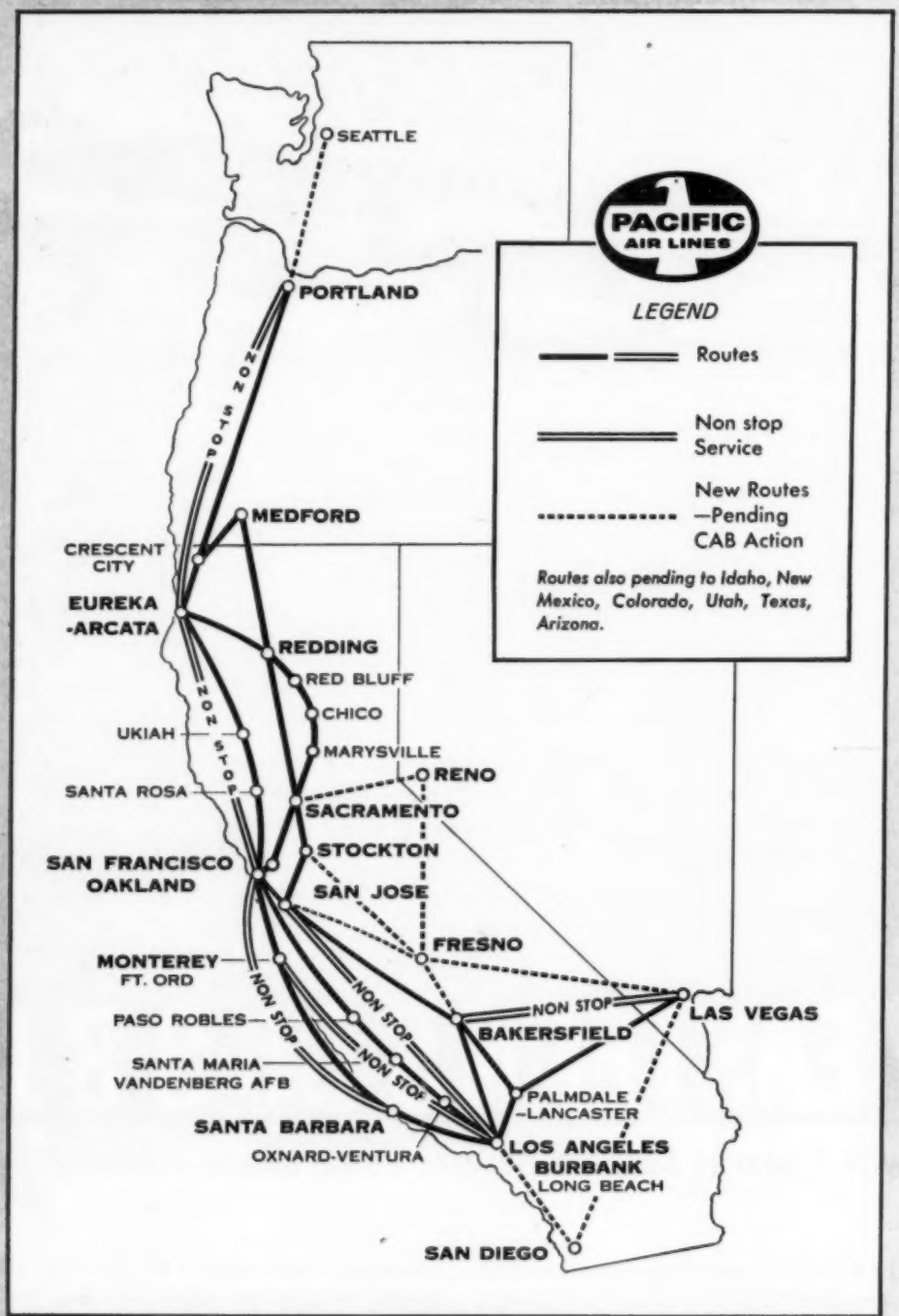
The Jet with Power to Spare... Reserve Power means Dependability Plus!

Here's the finest jetliner of all—Eastern's big DC 8-B Jet. Equipped with powerful J-75 engines, the DC 8-B speeds you to your destination at 600 miles per hour. And whether you fly luxurious Jet Golden Falcon or economical Jet Coach, you relax in unsurpassed comfort all the way. Handsomely appointed interiors, deep-cushioned reclining seats and the special attentions of Eastern's highly trained flight crews—all combine to make your DC 8-B Jet trip a truly memorable travel experience.

EASTERN AIR LINES

DEPENDABILITY...FROM THE GROUND UP

Serving America's Fastest Growing Markets



PACIFIC AIR LINES

GENERAL OFFICES • INTERNATIONAL AIRPORT • SAN FRANCISCO, CALIFORNIA

TWENTY SECOND EDITION

• 1961 •

FACTS and FIGURES about AIR TRANSPORTATION

OFFICIAL PUBLICATION OF THE AIR TRANSPORT ASSOCIATION OF AMERICA

THE STANDARD REFERENCE OF UNITED STATES SCHEDULED AIR TRANSPORTATION

AIR TRANSPORT ASSOCIATION *of America*

Twenty-Second Edition

Facts and Figures, 1961

Table of Contents

At the end of 1960 the jet age in scheduled air transportation was two years old.

Despite the fact, as shown in the text and tables, the industry flew more people, more goods and more mail than ever before, the financial picture for 1960 was discouraging from the profit standpoint. The trunk airlines—which account for 70 per cent of the entire scheduled air transport industry's operations—had total operating revenues of nearly two billion dollars, but their net profit was down to only a little more than a million dollars.

The tables this year show the six consecutive years, 1955-1960. Revised data filed by the scheduled carriers with the Civil Aeronautics Board are the major source of the statistics.

Aircraft Operations at F.A.A. Airport Towers 27
Aircraft Owned and on Order 29
Alaskan Airlines 14, 15, 17, 19, 21, 24, 31
All Cargo Airlines 14, 15, 17, 19, 21, 25, 31
Assets, Liabilities and Stockholders' Equity 22
Available Service and Utilization 14
Average Length of Haul (*Revenue Passenger Table*) 26
Average Revenue Per Passenger Mile 26
Class of U. S. Commercial Air Carriers 31
Consolidated Industry 14, 15, 17, 19, 21, 25
Definition of Terms 2
Directors of Air Transport Association ..... Back Cover
Domestic Trunklines 14, 15, 16, 18, 20, 22, 26, 28, 31
Helicopter Carriers 14, 15, 16, 18, 20, 23, 26, 31
Intercity Passenger Mile Market (*Domestic*) 27
International and Overseas 14, 15, 17, 19, 21, 24, 26, 28, 31
Intra-Hawaiian Airlines 14, 15, 16, 18, 20, 23, 26, 31
Local Service 14, 15, 16, 18, 20, 22, 26, 31
Members of Air Transport Association ..... Back Cover
Officers of Air Transport Association ..... Back Cover
Operating Expenses 18
Operating Revenues 16
Personnel Employed 30
Post Office Profit on Domestic Airmail 28
Profiit or Loss Summary 20
Record of Accomplishment 3
by Stuart G. Tipton, President of the Air Transport Association
Revenue Passengers Carried 26
Revenue Passenger Miles by Class of Service 27
Revenue Ton Mile Traffic Carried 15
Safety Records 28
U. S. Airline Share of Air Travel Between U. S. and Foreign Countries 30

Definition of Terms

Passenger Miles and Ton Miles

AVAILABLE SEAT MILES FLOWN. Total seat miles available for sale in scheduled service.

AVAILABLE TON MILES. Total ton miles of lift capacity available for sale in scheduled and charter service.

CHARTER FLIGHT. Transportation of passengers or property on other than scheduled and designated extra section flights.

EXPRESS TON MILE. A ton of express flown one mile.

FREIGHT TON MILE. A ton of freight flown one mile.

PASSENGER MILE. One passenger flown one mile.

PASSENGER LOAD FACTOR. The percentage of available seat miles actually sold in scheduled service.

PASSENGER TON MILES. Passenger miles converted to ton miles. (See definition of revenue ton miles.)

REVENUE PASSENGER MILES. The number of fare paying passengers flown times the length of trip in miles. This is the amount of available seat miles sold.

REVENUE PLANE MILES. Aircraft miles flown in scheduled service.

REVENUE TON MILES. The ton miles sold in scheduled and charter service. In the construction of this traffic measure passenger miles are converted to ton miles on the basis of about 10 to 1. That is, ten passengers with allowable free baggage are accepted as equalling one ton.

SEAT MILE. One passenger seat, filled or unfilled, flown one mile.

TON MILE LOAD FACTOR. Percentage of available ton miles sold in scheduled and charter service.

U. S. MAIL TON MILE. A ton of mail flown one mile. The mail figures are in two categories. These are defined as Priority and Non-Priority. Priority mail includes air mail and air parcel post. Non-priority mail is first class mail that moves in air service. At present non-priority mail is being flown on an experimental basis between certain selected cities.

Revenues and Profit and Loss

EXPRESS REVENUE. Revenues accrued from the carriage of express.

FREIGHT REVENUE. Revenues accrued from the carriage of freight.

INCOME TAXES. Federal Income taxes.

NET OPERATING INCOME. The total operating revenue from air transportation services less the operating expenses (see definition of Operating Expenses). Net Operating Income is before taxes and interest charges and does not include non-operating items.

NET PROFIT OR LOSS. Net income after Federal income taxes—the amount available for dividends or investment in the business.

OPERATING EXPENSES. The expenses incurred in the conduct of the business except for such items as debt financing and other non-operating items.

OTHER REVENUE. All other revenues, including excess baggage, chartered services, foreign mails, penalties for failure to cancel reservation, service charges on non-revenue transportation of employees and special services such as photography and crop dusting.

PASSENGER REVENUES. Passenger revenues from scheduled operations.

PUBLIC SERVICE REVENUES. Payments by the Federal Government to insure air service to communities in the United States and its territories which could not otherwise afford it; to maintain essential international air routes which are not yet self-supporting; and to develop helicopter service.

PROFIT MARGIN ON SALES. Net profit after interest and after taxes as percent of operating revenues.

RATE OF RETURN ON INVESTMENT. Total return, i.e., net profit plus interest paid on long term debt, as percent of average investment. Investment is the average of total net worth (stockholder's equity) plus long term debt at the beginning and end of the year.

U. S. MAIL REVENUE. Service revenue for the transportation of mail. This is the amount paid by the Post Office to purchase air transportation for mail, and is not subsidy.

STUART G. TIPTON. *President*
Air Transport Association
of America

A STATE OF THE INDUSTRY AND PROGRESS REPORT

The enormous contributions the nation's airlines are making to the commerce, economy, and over-all strength and progress of the United States are reflected in this report covering the year 1960. This report also shows, however, that in so serving our country, our airlines in 1960 again experienced a year of depressed earnings which seriously threatens their financial stability and limits the possibilities of their continuing to expand and improve their services.

In 1960, despite record traffic volumes and gross revenues, the airline industry's net profits were lower than in any year since 1948. It was the fifth consecutive year of what the Civil Aeronautics Board has termed "a relatively extended period of depressed earnings which cannot lightly be dismissed."

More service was provided in 1960, and more passenger, freight, express and mail traffic was carried than in any previous year. During the year, the airlines added several hundred new jet-powered planes and committed additional hundreds of millions of dollars to the purchase of more new jets, safety advances, and facilities for improved airline service on the ground.

This constant forward progress, characteristic of airline management efforts over the years, not only has provided a stimulant to national economic activity, but also has—

- ★ exerted a continued growing impact on community development and progress throughout the nation;
- ★ emphasized the airlines' major role in the foreign trade position of the United States; and
- ★ elevated the air transport industry to where it has become a practical and symbolic element of national strength in the ideological struggle now being waged in the world.

The year was marked also by significant developments and trends such as:

- ★ In a period of expanding personal travel, the airlines widened their lead over other forms of public passenger transportation;
- ★ domestic low-fare aircoach traffic, for the first time, exceeded first-class travel during the latter part of the year;
- ★ the popularity of jet travel increased substantially with almost half the total airline passenger-miles accounted for by jet aircraft;
- ★ airfreight continued as the fastest-growing type of airline traffic.

These and other developments illuminated by the facts and figures in this report tell the progress side of the airline story. On the other side, however, is the most serious problem of inadequate airline earnings.

Even in a year when business in general suffered depressed earnings, airline earnings were far below the norm. Thus, the average U. S. corporation made 5¢ profit on every $1 of sales, but the trunk airlines

needed to do $83 worth of business to make a profit of five cents.

The Government has taken an initial step to help strengthen the airlines earning position. Last year, after an exhaustive 4½-year investigation, CAB concluded that the airlines needed earnings equivalent to a 10½ per cent return on capital investment.

A vast improvement in profits is needed, of course, to achieve that earnings level. At the same time, other corrective steps are necessary. Thus, the Government, to improve profits, must move decisively to:

- ★ eliminate the World War II tax on passengers which stifles needed traffic growth;
- ★ end needless competition for private carriers provided by MATS, the Government-owned airline;
- ★ discontinue Government traffic-procurement practices which force unreasonably low rates on airlines and other common carriers; and
- ★ cope with the growing foreign airline threat.

Unquestionably, obstacles such as those must be removed. And future Government policies and actions must reflect awareness of the national need for an economically strong air transport industry and the fact that the airlines, in 1960, earned only about 1/59th of what the Government itself has determined is necessary to serve that national need.

We have, in this report, summarized the progress and results of 1960, the more pressing problems, and have taken a look into the future; this in addition to our annual presentation of detailed industry statistics.

Although numerous major United States industries had a business fall-off in 1960, the U. S. certificated airline industry enjoyed record business volume. The airline results show consistency with national economic patterns, however, in that the rate or pace of airline traffic growth slowed down last year.

This is reflected in results in key traffic areas as follows:

- ★ 57,700,000 passengers carried in 1960, up 3,000,000 over 1959—as compared with a gain of some 7,000,000 the previous year.
- ★ 38.8 billion revenue passenger-miles in 1960, up 2.5 billion over 1959—as compared with a gain of 5 billion the previous year.
- ★ 643.8 million ton-miles of airfreight in 1960, up 61.4 million over 1959—as compared with a gain of 88 million the previous year.
- ★ 58,948,000 ton-miles of express, a gain of 2.3 million ton-miles over 1959—as compared with a gain of 8 million the previous year.

An exception to this general trend was in the field of mail carriage where growth in 1960 outpaced that for the previous year. Thus, the airlines last year carried 240,580,000 ton-miles of U.S. mail, up 40.3 million over 1959—as compared with a gain of 22.7 million in 1959.

Total operating revenues of all U. S. scheduled airlines reached a record $2,882,552,000 in 1960, a gain of 10.4 per

THE AIRLINE STORY

Ever Increasing Usefulness Over The Years

All classes of Certificated Air Carriers	1939	1949	1960
Number of Airlines	23	45	56
Cities Served (excluding Alaskan points)[2]	284	638	721
Aircraft in Service	347	1,083	1,848
Seats Available (Daily)	5,100	35,900	121,839
Cruising Speed of Fastest Transport	220 mph	315 mph	615 mph
Number of People Employed	13,300	76,000	166,408*
Total Airline Payrolls	$24,000,000	$349,000,000	$1,106,189,000*
U.S. Mail Ton Miles	8,610,000	61,144,000	240,580,000
Number of Passengers Carried	1,864,000	16,723,000	57,700,000
Average Fare Per Pass. Mile	5.62¢	6.23¢	6.01¢
Ton Miles of Freight Carried	2,713,000[1]	112,500,000	643,792,000

[1] Freight and Express combined.

[2] Early figures for Alaska not available but in 1960 there were 242 points served.

* Includes Estimates

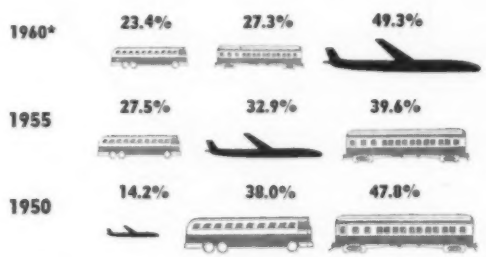
cent over 1959. Similarly, total operating expenses rose to a record high total of $2,803,575,000 last year, or 12.6 per cent more than the previous year.

Net profit, after taxes and interest, for all carriers was $9,579,000, down $61,928,000 from the 1959 total of $71,507,000.

Passenger Service: The field of airline passenger service was marked in 1960 by such things as:

- ★ Continued service and traffic growth;
- ★ A widening of the passenger-mile gap in favor of airlines over other forms of public transportation;
- ★ Fare adjustments;
- ★ A shifting trend in classes of passenger traffic;
- ★ Emphasis on ground service improvements.

AIRLINES NOW NO. 1 IN U.S. TRAVEL
based on
Inter-city, common carrier, Passenger Miles



* Estimates for year based on preliminary figures

Last year, the airlines provided an all-time high volume of service—65.5 billion available seat-miles, a gain of 6.2 billion over 1959 and more than four times the amount of service provided just ten years ago.

The record volume of traffic thus accommodated—38.8 billion revenue passenger miles—occupied 59.2 per cent of available capacity, a passenger load factor figure which compared with 61.2 per cent in 1959 and 59.3 per cent in 1958.

This constant growth in airline service and public demand therefore, is, of course, one of the most significant elements in our fast-changing world. Ten years ago, the public relied chiefly on railroads and buses for common carrier service between U. S. cities. In 1960, domestic inter-city passenger-miles of the airlines were about as much as those of railroads and buses combined, further widening a lead the airlines assumed in 1957.

As a result of management efficiencies and rapid technological advances, the cost to the public for air transportation has been notably resistant to inflation.

Thus, since 1938, domestic air passenger fares have increased only 13 per cent, as compared to an increase of 100 per cent in consumer prices and 49 per cent in railroad fares over the same period.

The slight air fare increase includes that called for in mid-1960 in the Civil Aeronautics Board's finding that airline profits were too low. That increase amounted to 2 per cent plus $1 per ticket.

Significantly, there occurred in 1960 a marked increase in the provision of low-fare coach service by domestic carriers and in the utilization of that service by the public. Thus, there was an increase of 19.6 per cent in available coach seat-miles in 1960 over 1959, and an increase of 18.1 per cent in coach passenger-miles.

On the other hand, there was an absolute decline in first-class passenger-miles of 5.1 per cent last year. As a result, coach accounted for 47.2 per cent of total domestic passenger-miles in 1960, up from 42.0 per cent the year before. In several months during the last half of 1960, coach passenger-miles rose to over 50 per cent of the total. Fares for this service, of course, are 25% or more under regular first-class fares.

Meanwhile, the airlines devoted increased attention and resources to improving ground services for airline passengers. The growing scope of this undertaking can be seen in the fact that 50,000,000 reservations were handled by domestic airlines last year and 120,000,000 annually are expected by 1970.

Currently, the airlines spend some $93 million a year in this area. Additional millions are being poured into new systems of vast complexity and maximum efficiency. One airline, for example, has put $2,250,000 in a system whereby its agents in almost 100 cities can find out instantly seat availability up to six months ahead on 60,000 itineraries.

Another is installing a centralized automatic system which, in about a year, will serve 1100 sales desks, handle 7500 reservations an hour, process them in 3 seconds

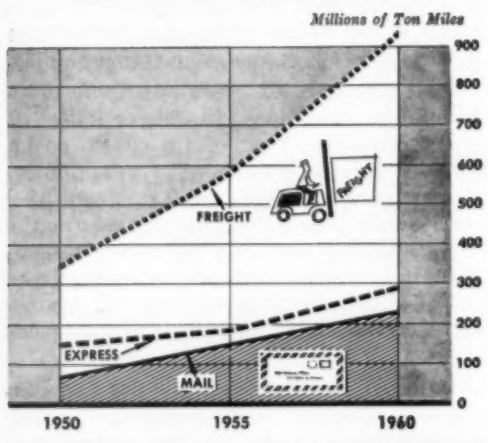
(as compared to 45 minutes now), reduce errors—and cost $5,000,000 per year.

Throughout the industry, online and interline facilities are being geared to the fast-growing market that must be accommodated.

Airfreight Service: Airfreight developments in 1960 were highlighted by a substantial increase in the cargo-carrying capacity of the certificated airlines. Mainly, this resulted from the greater cargo space aboard the big new jets plus the conversion of many late-model piston-engined planes to all-cargo configurations.

Significantly, there will be a further substantial increase in airline cargo capacity this year as more new jets and converted planes come into service and several carriers take delivery on new prop-jet airfreighters.

AIRLINES CARGO REACHES NEW HIGH



One immediate effect of this build-up in capacity is that it is requiring a complete re-examination of the entire airfreight rate structure.

Last year's freight volume reached a record high of 643,792,000 ton-miles, up 9.7 per cent over 1959, and 45 times the volume carried in 1946, the first full year of industry airfreight operations. As a result of this rapid growth, airfreight is the second most productive form of traffic carried by the airlines, accounting for 12.5 per cent of total ton-miles of traffic.

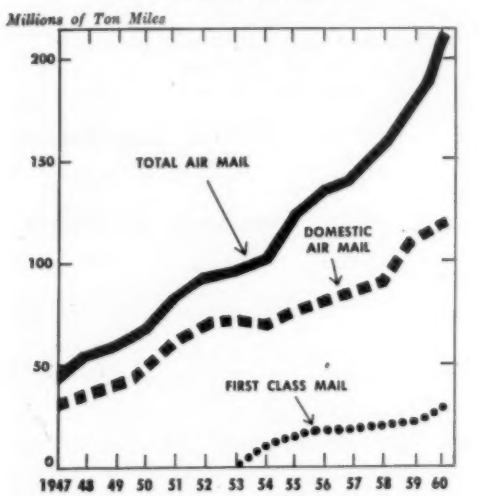
Nevertheless, the airlines are gearing themselves to carry much greater quantities. Last year's volume, for example, while a record high for the airlines, represented only .05 of one per cent of the total inter-city freight ton-miles moved by all forms of transportation in the U. S.

Great quantities of Government freight, of course, are moved annually via MATS, the Government-owned airline. Much of this, moving between areas served by the certificated airline system, could be accommodated by that system.

Action of this type was called for recently by Senator A. S. Mike Monroney who said:

"It's high time we break this bottleneck by using Government cargo movements as a seed bed for a brand new industry of great prospects and promise —and at the same time ensure the kind of mobility on a world-wide basis that can help guarantee against a shooting war—either limited or atomic."

MAIL VOLUMES ARE INCREASING



Mail Service: Vast improvements in the Postal Service were made possible in 1960 as the airlines made increased capacity and speed available and participated in expansion of non-priority mail by air services to the new states of Alaska and Hawaii.

Recently, the Civil Aeronautics Board commented:

"The carriers have continued to improve service to the public and make expanded mail services available to the Post Office Department. At the same time, the unit price paid to the carriers for the movement of mail by the Department has declined."

Total U. S. mail volume carried by the certificated airlines last year was 240,579,000 ton-miles, an increase of 17.4 per cent over 1959. Mail traffic accounted for 4.8 per cent of total traffic carried by the airlines and 3.2 per cent of total revenues.

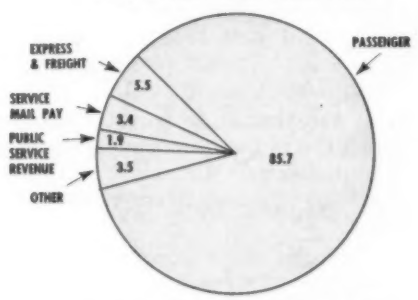
Express Service: Expanded service for air express users resulting from the new partnership agreement between the airlines and the Railway Express Agency showed results as air express traffic gained for the third straight year.

1960 express volume was 58,948,000 ton-miles, up 4.1 per cent over 1959. Express traffic accounts for 1.2 per cent of total airline traffic and slightly under 1 per cent of total revenues.

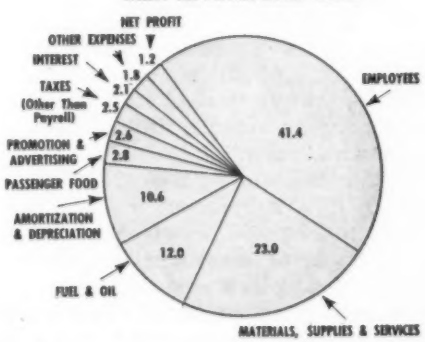
The Jet Fleet: At the end of 1960, the U. S. certificated airlines operated a fleet of 1,908 aircraft. Included were 470 jet-powered planes of which 224 were pure jets and 246 were prop-jets.

THE 1960* AIRLINE DOLLAR

Where the Airline Dollar Came From:



Where the Airline Dollar Went:



* For the 12 month period ending September 30, 1960

This year, the airlines will take delivery of an additional 157 jet-powered planes, consisting of 118 pure jets and 39 turboprops. That will raise the total jet-powered fleet of fixed wing aircraft to 627.

An additional 82 jet planes are scheduled for delivery in the 1962-65 period. Also, 19-turbine-powered helicopters are on order for delivery in 1961-62.

Safety: Last year was the ninth consecutive year in which the fatality rate on the U. S. scheduled air transport system was less than one per 100,000,000 passenger-miles flown.

Actual rate for total domestic and international operations was 0.86 fatalities per 100,000,000 passenger-miles, or about three times better than the fatality rate for passenger automobile travel.

There was a total of nine accidents involving passenger fatalities last year, a year in which the U. S. air carriers performed 3,856,477 scheduled flights (as measured by flight departures). Passenger fatalities totalled 337. That is about 140 less than the average for one week on the U. S. highways.

Nevertheless, by the airlines' own rigid safety standards, the 1960 industry record is not considered satisfactory. Most airlines, of course, operated the year without a fatality. An across-the-board zero fatality rate for the entire industry is the only standard that will be considered satisfactory.

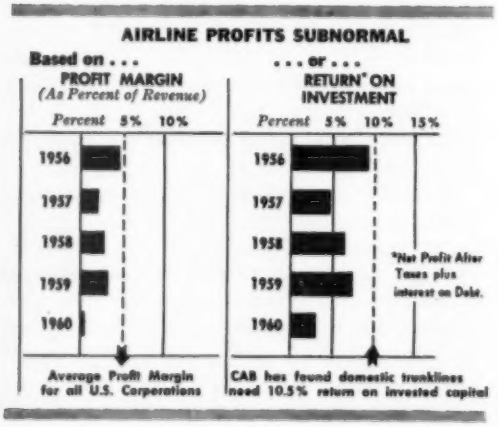
Progress to this end is evident in the long-range trend covering consecutive five-year periods. Thus, in the 1940-44 period, the average rate was 2.45 fatalities per 100,000,000 passenger-miles. But, in the latest five-year period, 1956-60, the record was improved to 0.55.

Earnings: The tremendous progress of the airlines in making the civil jet age a reality for the American public has been marred by subnormal profits. Last year, for example, the domestic trunk airlines earned only $1,188,000 on gross revenues of $1,942,634,000, a profit margin only 1/83rd of the average for all U. S. corporations.

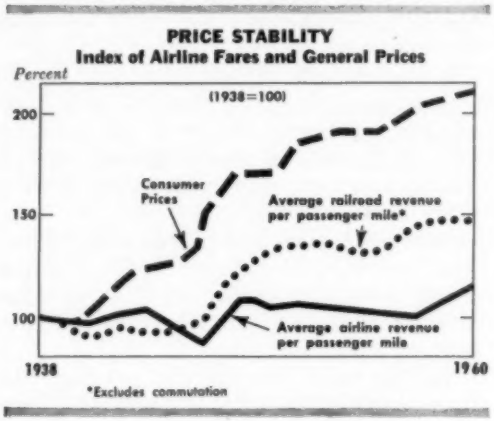
Equally important, 1960 was the fifth consecutive year of depressed earnings for the airlines. These have been five critical years during which the airlines ordered and had to arrange financing for some $3 billion worth of new jet planes. They have been five years during which extensive training and over-all plant modernization was necessary in preparation for the new planes the first of which started in service in late 1958.

In 1954—on the eve of this critical period—the airlines sought Government permission to take steps to guard against the very deterioration in profits that began midway in 1955. The permission was denied.

In the spring of 1956, the Civil Aeronautics Board instituted its General Passenger Fare Investigation, a formal proceeding dealing with trunkline earnings which lasted four and one-half years. In early 1957, the carriers applied for emergency permission to raise fares in view of a rapidly worsening profit position. That permission was denied.



Early in 1958, CAB recognized the need for fare relief and permitted airlines to raise fares 4 per cent plus $1 per ticket, or about 6 per cent in total. In the fall of 1958, CAB permitted the elimination or reduction of certain discounts. These actions were helpful but, it should be noted, they came in the fourth year after the airlines' original request.



Last year, the CAB concluded its general fare investigation. Several of its observations contained in the final decision are worthy of note:

- ★ "Unfortunately, as contrasted with total revenue growth, airline profits have not only fluctuated but trended downward since mid-1955. While total operating revenues almost doubled between 1951 and 1956, net operating income after taxes was significantly less in 1956 than in 1951."
- ★ ". . . the transition to jet equipment which the industry is now undergoing has presented financial and other problems of a magnitude never before faced."

Coupled with these conclusions was a Board finding that fares were still not at an adequate level and CAB suggested an increase of 2 per cent plus $1 per ticket, effective July 1, 1960. Thus, in three stages, airline fares were raised approximately a total of 20 per cent. Industry efforts aimed at prevention of profit deterioration were discarded in favor of belated Government "cures".

Nevertheless, while a repeat of this performance in a subsequent modernization program could prove disastrous, there are definite signs of more realistic Government policies in this area.

In winding up its 4½-year fare investigation, for example, the CAB noted the unique characteristics of the airline industry and ruled that airline earnings should be equivalent to a 10.5 per cent average

return on investment for extended periods.

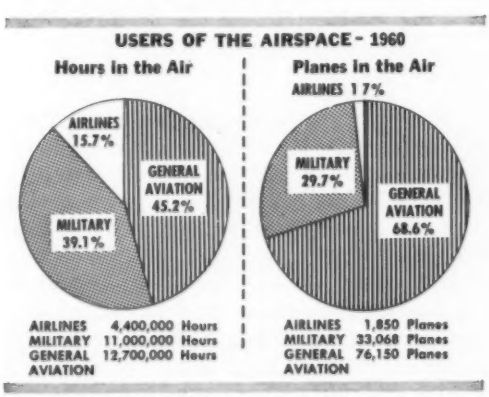
Over the five critical years just passed, the trunk carriers fell far short of reaching that earnings level. Last year, the carriers earned 2.90 per cent on invested capital, or about $116,000,000 less than required to attain the needed return.

One of the important reasons it is necessary to improve this picture was stated this way recently by the new CAB Chairman Alan Boyd:

> *"Today's low (airline) earnings focus attention on another of our immediate problems. Mach 3 (supersonic) is staring us in the face . . . Carrier earnings are the only hope for a substantial private enterprise contribution to supersonic development—and the nation must develop one. Carrier earnings in the years immediately ahead are the only hope that a private enterprise air transport system can absorb the next equipment transition."*

Regulation: The Federal Government has regulated air transportation since 1938. It does so through the Civil Aeronautics Board—in the field of economics and accident investigation—and the Federal Aviation Agency—in technical fields, including safety regulation.

These agencies are the product of Congressional actions expressed first in the Civil Aeronautics Act of 1938 and later in the Federal Aviation Act of 1958.



To date, regulation of air transportation has accomplished much—but also has left much to be desired. Thus, the agencies have, on various occasions, displayed an inability to adjust their thinking and policies to the swiftly changing industry they regulated.

Nevertheless, the ultimate conclusions of CAB in the general fare investigation and recent declarations by Federal officials indicate a more encouraging regulatory policy will prevail in the future. Hopefully, we have arrived at a turning point where Federal regulation is gearing itself to the dynamism of today.

The vital role that civil aviation now occupies in the nation's social, economic, and political structure requires maximum efficiency in these Congressionally established agencies.

There would, of course, be little hope for such maximum efficiency, and the public benefits that depend thereon, were these agencies to be swallowed up in a single Department of Transportation as seems to be proposed year after year.

To link the interests and problems of civil aviation with all its technical, international, and domestic facets to the interests or problems of surface-bound transport companies would not only be impractical but damaging to national interest and counter to the wishes of Congress.

Over a decade ago the U. S. Supreme Court found "no indication that the Congress either entertained or fostered the narrow concept that airborne commerce is a mere outgrowth or overgrowth of surface-bound transport." Rather, it said, "air commerce, whether at home or abroad, soared into a different realm than any that had gone before."

It is the promotion, encouragement, and regulation of such an industry that has been entrusted to CAB and FAA. This country cannot afford the mistake of going backward in this matter—not even for the length of time it might take us to discover and correct our mistake.

Transportation Tax: One of the most important single actions the Government could take to help our nation's entire common carrier transportation system would be to repeal the 10 per cent tax on passenger transportation.

This tax, imposed directly on passengers, was designed in 1941 as a means of discouraging travel on transportation facilities essential to the war effort.

Today, when airlines, railroads, and buses are dependent on traffic growth, the continuation of a tax designed to achieve the opposite result, does just that—it stifles traffic growth.

As one Congressman put it, this tax "continues to burden the public and to threaten the well-being of an industry essential to the national defense." Numerous bills have been introduced at the present session of Congress to repeal this tax on June 30, 1961.

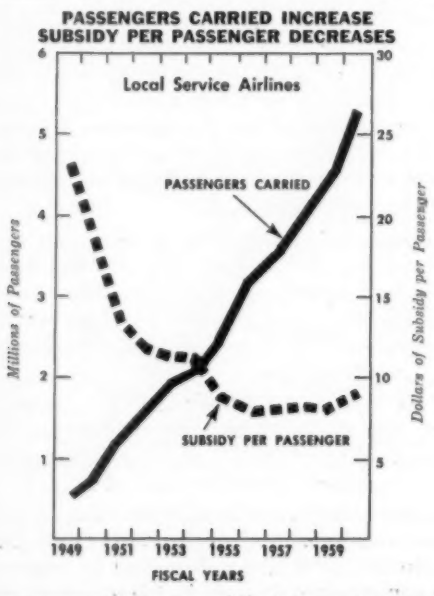
Cut-Rates For Government: Another area where the Government must act to strengthen the common carrier system is in its role as that system's biggest single customer.

Almost 12¢ out of every transportation dollar taken in by the airlines, railroads, steamship and motor carriers combined comes from the Government as a customer. Its impact is about the same as it would be on the automotive industry if the Government purchased three-quarters of a million cars each year.

Yet, while the Government acts to insure fair rates for the public and the carriers, on the one hand, it indulges in cut-rate practices with respect to the traffic it ships via the common carrier system.

When a customer of such size uses its size to chisel transportation rates down to uneconomic levels, it not only is injurious to the companies but affects the prices that must be paid by the general public.

The Air Transport Association has urged that the Executive, Congressional, and regulatory branches of the Government move to correct this problem. Also, we have formally requested the Transportation Association of America, on behalf of the national common carrier system to make this a major undertaking. The aim, simply stated, is to make sure that discrimination in favor of the Government be ended and that rates for Government traffic be made subject to the same machinery applied to rates for the general public.



Government Competition: The Government-owned airline, Military Air Transport Service (MATS), in fiscal 1960, moved 93 per cent of its passengers and 89 per cent of its cargo between areas served by the nation's certificated air carrier system.

Efforts in 1960 to stimulate greater use of the national air transport system in the movement of this traffic were highlighted by CAB's withdrawal of a "blanket exemption" in effect since the Korean War, under which a policy of destructive competitive bidding prevailed.

According to CAB, the effect of that policy over the past ten years "appears to have been the development of what amounts to an overlapping air transport system, operated by MATS, alongside the system authorized by the Board under the Federal Aviation Act to serve the Nation's national defense and commercial needs."

Under CAB's policy, the authority contemplated by the Federal Aviation Act has been reinstated and CAB must pass on bids for MATS business. Meanwhile, there is continued strong Congressional support for transferring more of MATS' airline-type traffic to the certificated airlines. This is to strengthen MATS for its true military role by cutting down its commercial airline type activities—and it is to strengthen the over-all national airlift capability by realistic use of the national air transport system.

Foreign Competition: The relative position of the U. S. - Flag airlines in the air travel market between the U. S. and foreign countries deteriorated sharply in 1960. Although the market consists primarily of U. S. citizens—more than 6 out of every 10—the U. S. airlines share of the market dropped to 51.8 per cent. It had been 56.7 per cent the previous year.

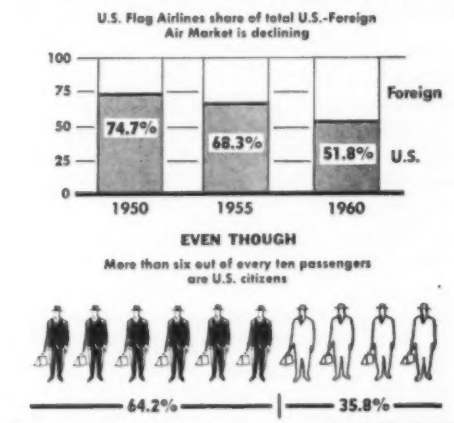
Foreign air carriers, who in 1950 carried about 25 per cent of this traffic, thus

increased their share in 1960 to 48.2 per cent. If this trend continues—and there are no signs that it will be interrupted—1961 will gain the ominous distinction of being the year that the United States surrended the lead to foreign airlines in the carriage of U. S. international air traffic.

The growth and development of the entire U. S. certificated air carrier system is affected by this development. Under U. S. negotiating policies over the years, not only have more foreign airlines been added in this market but more and more have been given rights to penetrate the domestic U. S. field.

One foreign airline operating from the U. S. west coast to Europe, for example, diverts more than $3 million annually from U. S. transcontinental airlines—an amount greater than the entire net profit of the domestic trunklines in 1960.

PASSENGER TRAFFIC BETWEEN THE UNITED STATES AND FOREIGN COUNTRIES

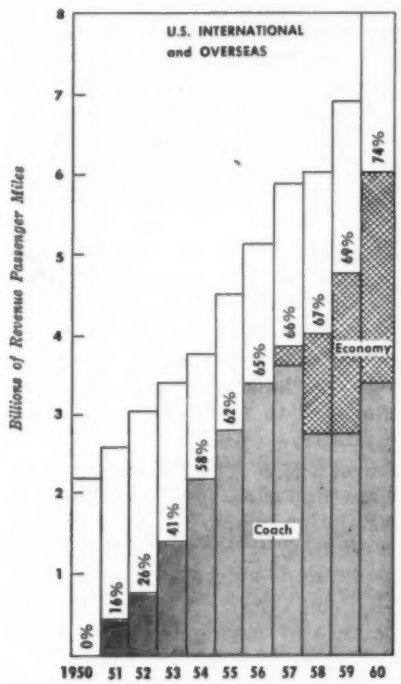


Meanwhile, U. S.-Flag airlines are facing new developments abroad. Airlines of foreign countries, primarily in Europe, are banding together in pools and combines—dividing services and revenues on specific routes. In some cases, air protectionism is becoming evident with some nations party to a pool or combine tending toward restriction of U. S. airline operations.

To avoid a repeat of the deterioration of our merchant marine—the United States Government quickly and intelligently must reappraise its policies in this critical area.

At the same time, this country cannot afford to ignore the significant growth in the Soviet Airline, Aeroflot, which is rapidly stretching its massive system to countries throughout the world. Aeroflot has become a new vanguard for economic and political penetration of non-Iron Curtain countries.

REDUCED FARE TRAFFIC COMPRISES AN EVER-INCREASING PROPORTION OF THE TOTAL



Best information available indicates the Soviet airline has some 1800 transport planes in operation including about 200 jet-powered aircraft. It continues to build up at a rapid pace. Its domestic and international system ranges between 350,000 and 400,000 route miles serving 130 to 140 major airports and perhaps another 335 cities without improved airport facilities.

In less than a decade, it has been transformed into a major element of national prestige and political influence for the Soviets—and there are no indications the Russians are content to remain behind the United States in this vital area.

National Impact: Air transportation has become one of the nation's most dynamic forces. It has grown much more rapidly than the general economy. Traffic growth since 1949 is 328 per cent compared to a 51 per cent growth in the Gross National Product.

And the potential for growth in the decade ahead is substantial. CAB has forecast that domestic revenue passenger-miles —which totalled just over 30 billion in 1960—will be about 50 billion by 1965; by 1970, the Federal Aviation Agency forecasts more than 60 billion passenger-miles—double last year's record high.

National Goals: Recognition of this tremendous impact led President Kennedy recently to establish a high-level task force to conduct what has been called "Project Horizon."

The President called for this group to "redefine and affirm" national aviation goals for the decade ahead.

Out of this project is expected a statement—not of goals that *might* be accomplished—but national objectives that *must* be accomplished to maintain our position in world affairs.

U. S. Travel Office: The air transport industry has supported proposed Congressional legislation which would establish, for the first time, a United States travel office to develop tourist travel to this country.

The balance of payments deficit which faced the U. S. in 1960 included a $1.2 billion deficit in travel and transportation, an amount accounting for 27 per cent of the total deficit. This means there was a substantially greater outflow of tourists and tourist dollars than came into the United States.

As Senator Warren Magnuson described it: "Last year, American tourists flocked abroad in the greatest numbers in history, while travel to our country for foreign visitors showed no significant gain".

The air transport industry supports a positive approach to this problem, i.e. maintaining the growth of U. S. tourism abroad while concentrating on steps to develop substantial growth of foreign visitors to this country.

In addition to the broad social and cultural advantages of such a program, this policy promises national economic gains of significant stature.

SELECTED INDICES OF GROWTH

Local Service Airlines

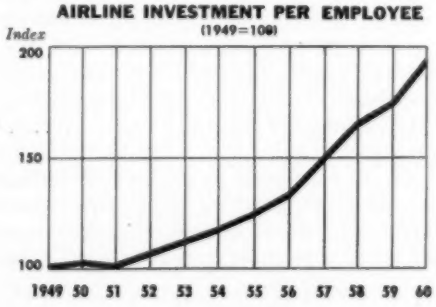
	1950	1960
Total Cities Served	369	547
Cities Served EXCLUSIVELY by Local Service Airlines	195	334
Unduplicate Route Miles	24,769	46,477
Planes in Service	128	302
Plane-miles Flown Daily	90,470	254,000
Seat-miles Available Daily	1,641,500	7,367,000
Employees	4,795	12,295

Supersonic Transport: Interest in this country and abroad in supersonic air travel was accelerated in 1960. In this country, most attention was devoted to a Mach 3 plane, i.e., one that would fly about three times the speed of sound or about 2,000 miles per hour.

Sometime, in the near future, perhaps in the 1970s, planes of this type will become a reality for the traveling public. Significant at this time is the national prestige factor involved. England, West Germany, France, and the Soviet Union are reported to be going forward in the supersonic field. Government and industry experts testified before the House Committee on Science and Astronautics last year that the U. S. can't afford to lose out in this competition.

AIRLINE INVESTMENT PER EMPLOYEE

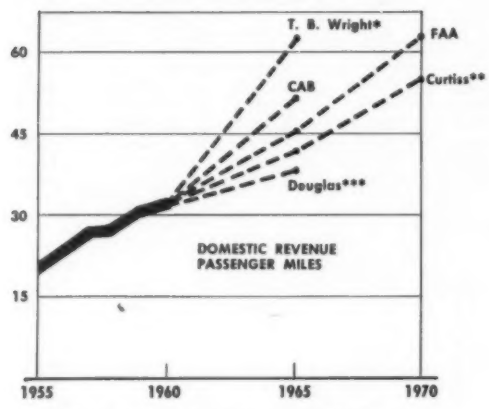
(1949=100)



". . . a record of accomplishment."

From the airline standpoint, substantial improvement in the earnings position is a key factor in how successful U. S. efforts in this area will be.

POTENTIAL FOR FUTURE GROWTH
(5 representative forecasts)

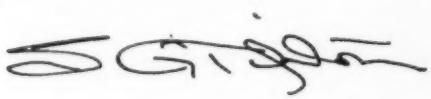


*Chairman of Board, Cornell Aeronautical Laboratory
**Special Asst. to President, Aviation Facilities Planning, 1956-57
***Douglas Aircraft Company

The facts and figures in this report make apparent the progress, problems, and potential of our national air transport system. They represent the basic material necessary for a true perspective of air transport's vital role in our national affairs.

There is a record of accomplishment underlying all of this—one that shows that the airline industry has consistently provided the pioneering vision and courage needed to expand and improve its service to the public.

We have now entered a period, however, where these qualities are even more in demand and where there is a greater need than ever for a broad understanding of the challenges facing this industry. This report is published so that it might contribute to that end.



STUART G. TIPTON

. . . In The Public Interest

FOR AIRLINES TO BE INCREASINGLY SAFE, EFFICIENT, AND ECONOMICAL

In line with the Congressional mandate for the "promotion and continued development" of a sound air transport system and in keeping with objectives and obligations of the United States, decisions, policies, and actions should flow from these basic principles:

1. Civil aviation is an absolutely essential part of the economic, social, and national defense structure of the country.
2. The growth, modernization, and general price stability of commercial air transportation exemplifies qualities now called for on a broad front.
3. Basic responsibility for airline growth and development has been entrusted by Congress to the air carrier companies.
4. Government interest, action, and concern is necessary in areas consistent with maximum growth, opportunity, safety, and progress. Regulation for regulation's sake must be avoided.
5. The self-generating characteristics of air transport service and technology should be preserved and encouraged.
6. Where existing impediments to national objectives — such as the World War II travel tax — can be removed, efforts should be directed to that end. At the same time, new economic burdens should be avoided where inconsistent with the national need for a safe, efficient, and economical airline industry.
7. Where airline equipment and facilities can be utilized for Government traffic they should be made available and so utilized to foster maximum growth of the national air transport system and maximum capability of military units.
8. Air transport's significant role as a prime national element in the shifting tides of world trade should continue to be recognized and utilized.
9. United States international air transport policies should reflect the broadened scope and changing nature of foreign airline activity.

AVAILABLE SERVICE AND UTILIZATION

U. S. Scheduled Airline Industry
(In Millions)

	Available Ton Miles Flown	Revenue Ton Miles Flown	Ton Mile Load Factor (%)	Available Seat Miles Flown	Revenue Passenger Miles Flown	Passenger Load Factor (%)	Revenue Plane Miles Flown
Domestic Trunk Airlines							
1955	3,882.7	2,160.1	55.63	30,001.3	19,217.2	64.05	564.0
1956	4,393.2	2,417.0	55.02	33,752.6	21,643.1	64.12	622.1
1957	5,150.4	2,720.0	52.81	39,838.2	24,499.5	61.50	711.1
1958	5,190.2	2,750.9	53.00	40,695.0	24,435.7	60.05	700.6
1959	5,949.3	3,166.8	53.23	45,793.2	28,127.2	61.42	743.5
1960	6,582.8	3,332.5	50.62	49,153.6	29,233.2	59.47	712.8
Local Service Airlines							
1955	121.9	55.3	45.36	1,161.4	523.3	45.06	50.9
1956	145.6	66.8	45.91	1,385.0	633.2	45.72	59.5
1957	170.7	78.5	46.00	1,653.8	747.3	45.19	67.3
1958	185.4	86.6	46.71	1,793.5	820.2	45.73	72.3
1959	238.5	108.8	45.67	2,309.2	1,024.3	44.35	85.4
1960	282.3	121.2	42.93	2,724.7	1,141.6	41.89	93.3
Intra-Hawaiian Airlines [1]							
1955	16.1	8.4	52.10	134.7	78.1	57.99	4.6
1956	16.0	8.5	53.03	147.9	83.9	56.70	4.6
1957	15.7	9.1	57.96	154.9	89.5	57.78	4.7
1958	18.4	11.3	61.15	143.1	82.7	57.76	4.4
1959	21.1	12.7	59.89	187.2	110.9	59.21	5.3
1960	30.7	17.7	57.65	217.1	127.5	58.72	5.6
Helicopter Airlines (in thousands) [2]							
1955	434	195	44.93	1,708	628	36.77	1,148
1956	567	277	49.03	3,561	1,588	44.59	1,315
1957	1,056	448	42.42	8,049	3,272	40.66	1,604
1958	1,497	591	39.48	11,419	4,885	42.78	1,675
1959	1,759	855	48.61	14,628	7,478	51.12	1,899
1960	2,226	1,054	47.34	18,764	9,475	50.49	2,218
International and Overseas Airlines							
1955	984.6	633.8	64.37	7,012.1	4,410.8	62.90	130.7
1956	1,143.4	741.2	64.82	8,073.1	5,113.2	63.34	146.0
1957	1,292.9	827.0	63.96	9,038.1	5,751.7	63.64	155.7
1958	1,426.6	873.1	61.20	10,057.6	5,974.6	59.40	165.5
1959	1,573.7	1,026.4	65.23	10,474.2	6,894.6	65.83	164.5
1960	1,952.9	1,160.3	59.41	12,978.7	8,137.2	62.69	155.2
Alaskan Airlines							
1955	46.0	29.4	63.87	233.9	110.4	47.20	10.5
1956	66.9	44.8	66.98	284.1	137.0	48.21	11.3
1957	59.4	32.5	55.08	329.7	151.9	46.07	11.5
1958	59.9	32.9	54.89	369.0	163.8	44.39	11.5
1959	72.8	42.2	58.00	414.0	183.0	44.22	12.4
1960	73.8	45.0	60.97	421.9	189.9	45.01	13.2
All-Cargo Airlines							
1955	184.0	135.1	73.41	.....	.....	.....	17.1
1956	321.5	248.8	77.38	.....	.....	.....	23.5
1957	431.7	336.9	78.04	.....	.....	.....	23.3
1958	383.8	319.3	83.20	.....	.....	.....	16.1
1959	422.1	332.7	78.82	.....	.....	.....	16.2
1960	427.2	322.8	75.56	.....	.....	.....	14.6
CONSOLIDATED INDUSTRY							
1955	5,235.7	3,022.2	57.72	38,545.1	24,340.4	63.15	779.0
1956	6,087.1	3,527.4	57.95	43,646.3	27,612.0	63.26	868.4
1957	7,121.5	4,004.4	56.23	51,022.7	31,243.1	61.23	975.3
1958	7,265.7	4,074.7	56.08	53,069.6	31,481.9	59.32	972.1
1959	8,279.3	4,690.4	56.65	59,303.4	36,347.5	61.29	1,029.1
1960	9,351.9	5,000.5	53.47	65,514.7	38,838.9	59.28	996.9

NOTE: Available Ton Miles and Revenue Ton Miles include charter operations; all other items are for scheduled service only.

[1] Has been carried in the past as Territorial Airlines.

[2] Helicopter passenger service began in 1953.

REVENUE TON MILES OF TRAFFIC CARRIED

U. S. Scheduled Airline Industry
(In Thousands of Revenue Ton Miles)

	Passenger [2]	Priority U. S. Mail	Non Priority U. S. Mail [3]	Express	Freight	Charter Flights	Excess Baggage [4]	Total
Domestic Trunklines								
1955	1,825,631	71,859	14,175	49,603	174,017	5,737	19,046	2,160,068
1956	2,056,098	77,788	13,891	49,709	190,592	5,911	23,055	2,417,044
1957	2,327,334	82,057	15,137	42,752	218,432	6,335	27,983	2,720,030
1958	2,321,347	87,809	16,155	45,890	240,510	12,000	27,237	2,750,948
1959	2,672,087	98,485	17,929	53,106	282,473	13,270	29,419	3,166,769
1960	2,777,148	108,059	22,845	55,440	320,949	18,967	29,071	3,332,479
Local Service Airlines								
1955	49,713	928	328	1,403	1,355	1,338	245	55,310
1956	60,156	1,192	344	1,687	1,624	1,520	320	66,843
1957	71,079	1,174	345	1,642	2,082	1,717	471	78,510
1958	78,055	1,330	395	1,801	2,241	2,196	575	86,593
1959	97,514	1,695	504	2,210	3,122	3,060	710	108,815
1960	108,649	2,125	588	2,419	3,847	2,744	799	121,171
Intra-Hawaiian Airlines [1]								
1955	6,250	59	.....	N.A.	1,646	436	20	8,411
1956	6,710	63	2	.....	1,475	236	17	8,503
1957	7,259	63	1	.....	1,536	170	36	9,065
1958	6,611	67	2	.....	1,587	2,965	32	11,264
1959	8,879	75	.....	.....	1,625	2,057	29	12,665
1960	10,155	81	5	.....	1,806	5,605	31	17,683
Helicopter Airlines [5]								
1955	60	90	.....	31	5	.....	3	195
1956	149	89	.....	31	7	.....	1	277
1957	311	92	.....	33	8	3	1	448
1958	463	83	.....	32	6	5	2	591
1959	710	87	.....	41	7	7	3	855
1960	902	92	.....	40	6	10	4	1,054
International and Overseas Airlines [4]								
1955	453,195	52,409	.....	243	90,598	19,701	17,648	633,794
1956	524,369	55,158	.....	.....	109,235	32,652	19,757	741,171
1957	589,510	57,265	.....	.....	123,280	36,188	20,771	827,014
1958	597,326	65,825	.....	.....	128,925	60,817	20,191	873,084
1959	688,521	71,578	10	.....	153,956	91,397	20,980	1,026,442
1960	813,009	80,285	12,102	.....	184,930	48,277	21,649	1,160,252
Alaskan Airlines [6]								
1955	11,868	2,279	.....	.....	7,300	7,773	152	29,372
1956	14,719	2,383	.....	.....	7,948	19,527	241	44,818
1957	16,002	2,695	.....	.....	7,201	6,344	271	32,513
1958	17,290	3,069	35	.....	6,937	5,291	298	32,920
1959	19,389	3,619	10	.....	7,484	11,402	301	42,205
1960	20,106	4,137	131	.....	8,887	11,415	341	45,017
All-Cargo Airlines								
1955	.....	.....	318	.....	107,945	26,796	.....	135,059
1956	.....	381	1,188	1,266	140,420	105,526	.....	248,781
1957	.....	440	1,409	1,638	155,126	178,249	.....	336,862
1958	.....	2,040	621	1,112	121,382	194,104	61	319,320
1959	.....	6,128	161	1,250	140,816	184,226	78	332,659
1960	.....	7,240	2,889	1,049	123,367	188,020	217	322,782
CONSOLIDATED INDUSTRY								
1955	**2,346,717**	**127,630**	**14,821**	**51,280**	**382,866**	**61,781**	**37,114**	**3,022,209**
1956	**2,662,201**	**137,054**	**15,425**	**52,693**	**451,301**	**165,372**	**43,391**	**3,527,437**
1957	**3,011,495**	**143,786**	**16,892**	**46,065**	**507,665**	**229,006**	**49,533**	**4,004,442**
1958	**3,021,093**	**160,222**	**17,207**	**48,835**	**501,586**	**277,379**	**48,396**	**4,074,718**
1959	**3,487,100**	**181,667**	**18,614**	**56,607**	**589,483**	**305,419**	**51,520**	**4,690,410**
1960	**3,729,969**	**202,019**	**38,560**	**58,948**	**643,792**	**275,038**	**52,112**	**5,000,438**

N.A. Not Available.

[1] Has been carried in the past as Territorial Airlines.

[2] Passenger ton miles for years prior to 1957 were revised to conform with "standard" passenger weights as prescribed by the CAB effective January 1, 1957.

[3] See definitions, page 2.

[4] Foreign mail carried by International and Overseas and All-Cargo airlines is included in Excess Baggage. Therefore, it is also reflected in Consolidated Industry Excess Baggage data.

[5] Helicopter passenger service began in 1953.

[6] Express and Freight combined.

OPERATING

U. S. Scheduled Airline Industry

	Passenger	U. S. Mail		Public Service Revenue [1]	Express	Freight	Other [2]	Total
		Priority	Non-Priority					
Domestic Trunk Airlines								
1955	1,021,855	24,230	2,708	3,192	19,405	39,605	22,353	1,133,348
1956	1,142,197	28,937	2,654	2,609	18,101	42,173	26,160	1,262,831
1957	1,287,172	31,002	2,760	1,182	14,667	49,870	32,961	1,419,614
1958	1,362,992	33,039	3,076	2,386	16,140	57,351	38,265	1,513,249
1959	1,632,646	37,159	3,417	.....	19,157	67,026	39,204	1,798,609
1960 P	1,756,439	40,415	4,353	.....	21,785	74,792	44,850	1,942,634
Local Service Airlines								
1955	32,840	1,084	101	20,923	665	556	1,281	57,450
1956	40,166	1,004	102	23,211	775	750	1,704	67,712
1957	47,464	1,108	103	29,651	725	1,049	2,039	82,139
1958	56,488	1,273	90	32,746	809	1,183	2,364	94,953
1959	73,091	1,474	154	42,179	1,019	1,727	3,179	122,823
1960 P	83,448	1,755	159	54,650	1,370	2,127	3,322	146,831
Intra-Hawaiian Airlines								
1955	5,686	48	.....	291	.....	752 [3]	337	7,114
1956	6,042	51	1	288	.....	782	266	7,430
1957	6,975	51	2	72	.....	781	479	8,360
1958	7,063	54	.....	109	.....	776	1,391	9,393
1959	9,476	61	1	168	.....	832	1,062	11,600
1960 P	11,196	63	2	.....	.....	953	2,517	14,731
Helicopter Airlines								
1955	208	250	.....	2,710	100	23	64	3,355
1956	438	234	.....	2,833	115	28	63	3,711
1957	968	237	.....	3,567	101	36	123	5,032
1958	1,459	214	.....	4,369	101	31	115	6,289
1959	2,310	227	.....	4,915	132	39	137	7,760
1960 P	3,187	245	.....	4,931	211	41	(14)	8,601

P Preliminary

[1] Prior to October 1, 1953, Public Service Revenues were not reported separately.

REVENUES

(In Thousands of Dollars)

	Passenger	U. S. Mail		Public Service Revenue [1]	Express	Freight	Other [2]	Total
		Priority	Non-Priority					
International and Overseas Airlines								
1955	294,828	25,639	.....	1,583	77	31,853	30,324	384,304
1956	342,553	26,926	.....	8,308	82	36,683	38,113	452,665
1957	377,655	28,365	.....	555	80	41,475	39,818	487,948
1958	385,999	32,655	.....	.....	145	43,802	43,939	506,540
1959	433,098	35,153	.....	.....	93	50,253	46,859	565,456
1960 P	515,253	40,736	1,052	.....	120	56,931	44,428	658,520
Alaskan Airlines								
1955	8,162	2,333	.....	5,618	.....	2,464	3,747	22,324
1956	10,200	2,477	.....	6,241	.....	2,754	7,680	29,352
1957	11,263	2,662	.....	6,369	.....	2,651	4,063	27,008
1958	12,530	2,915	.....	6,839	.....	2,659	3,981	28,924
1959	14,603	3,288	.....	7,473	.....	2,793	5,423	33,580
1960 P	15,463	3,633	20	9,221	.....	3,315	5,029	36,681
All-Cargo Airlines								
1955	.....	60	.....	.....	.....	18,640	8,335	27,035
1956	.....	144	220	.....	447	25,564	26,485	52,860
1957	.....	189	263	.....	545	29,281	55,050	85,328
1958	.....	1,048	128	.....	300	23,349	52,026	76,851
1959	.....	3,154	39	.....	357	28,797	38,781	71,128
1960 P	.....	4,735	43	.....	337	24,930	44,509	74,554
CONSOLIDATED INDUSTRY								
1955	1,363,579	53,644	2,809	34,317	20,247	93,893	66,441	1,634,930
1956	1,541,596	59,773	2,977	43,490	19,520	108,734	100,471	1,876,561
1957	1,731,497	63,614	3,128	41,396	16,118	125,143	134,533	2,115,429
1958	1,826,531	71,198	3,294	46,449	17,495	129,151	142,081	2,236,199
1959	2,165,224	80,516	2,610	54,735	20,665	151,561	134,645	2,610,956
1960 P	2,384,986	91,582	5,629	68,802	23,823	163,089	144,641	2,882,552

[2] Other revenues include revenues from excess baggage, foreign mail and charter operations, and incidental revenues.

[3] Express and Freight combined.

DISTRIBUTION OF

U. S. Scheduled Airline Industry

	Flying Operations	Maintenance	General Services & Administration: Passenger Service	Aircraft & Traffic Servicing	Promotion & Sales	Administrative	Total G. S. & A.	Depreciation & Amortization	Total Operating Expenses
Domestic Trunk Airlines									
1955	302,591	196,320	72,996	133,274	134,706	68,473	409,449	101,709	1,010,069
1956	340,670	239,530	83,953	152,928	159,366	79,462	475,709	106,321	1,162,230
1957	434,842	270,328	95,505	217,208	157,561	55,164	525,438	146,968	1,377,576
1958	437,515	286,126	101,223	231,109	165,944	56,949	555,226	139,256	1,418,123
1959	505,244	346,389	130,939	275,301	198,782	64,990	670,012	171,729	1,693,374
1960 P	548,123	397,036	150,355	305,674	215,093	74,359	745,482	217,145	1,907,786
Local Service Airlines									
1955	18,080	10,384	2,687	9,563	9,287	4,485	26,022	2,278	56,764
1956	21,616	12,610	3,385	11,187	11,399	5,382	31,353	2,714	68,293
1957	26,509	16,418	4,028	21,160	6,089	4,938	36,215	3,758	82,900
1958	29,267	18,572	4,528	24,047	7,026	5,544	41,146	4,351	93,336
1959	36,831	24,951	6,080	31,188	9,291	6,852	53,411	6,887	122,080
1960 P	42,026	31,263	7,198	36,482	11,594	8,225	63,499	8,275	145,063
Intra-Hawaiian Airlines									
1955	1,942	1,278	245	1,258	1,045	964	3,512	603	7,335
1956	2,033	1,259	252	1,317	1,182	848	3,599	416	7,307
1957	2,212	1,422	278	1,521	1,265	868	3,932	515	8,081
1958	2,504	1,698	413	1,671	1,283	1,022	4,393	661	9,256
1959	3,076	1,933	456	1,948	1,726	1,223	5,353	909	11,271
1960 P	4,066	3,052	629	2,319	2,044	1,335	6,327	1,368	14,813
Helicopter Airlines									
1955	614	871	21	425	180	393	1,019	451	2,955
1956	697	981	21	544	312	496	1,373	605	3,656
1957	1,108	1,381	.....	.....	.....	.....	1,765 [1]	911	5,164
1958	1,416	1,618	.....	.....	.....	.....	1,982 [1]	946	5,962
1959	1,696	2,018	.....	.....	.....	.....	2,362 [1]	1,035	7,111
1960 P	1,934	2,546	.....	.....	.....	.....	2,710	1,192	8,382

P Preliminary.

[1] Detailed expense data not reported.

OPERATING EXPENSES

(In Thousands of Dollars)

	Flying Operations	Maintenance	General Services & Administration					Depreciation & Amortization	Total Operating Expenses
			Passenger Service	Aircraft & Traffic Servicing	Promotion & Sales	Administrative	Total G. S. & A.		
International & Overseas Airlines									
1955	108,501	58,975	26,773	46,990	61,980	31,291	167,034	31,094	365,604
1956	125,613	72,069	31,053	51,583	70,822	33,808	187,266	34,593	419,541
1957	142,944	72,326	32,519	67,187	70,902	24,631	195,239 [2]	50,359	460,868
1958	155,060	79,892	35,516	72,716	75,759	24,412	210,695 [2]	50,824	496,471
1959	161,300	89,740	42,762	80,503	85,866	27,617	238,125 [2]	58,183	547,348
1960 P	170,994	96,363	46,333	94,276	100,371	27,354	270,148	75,861	613,366
Alaskan Airlines									
1955	7,191	5,273	773	2,701	1,593	1,519	6,586	1,120	21,706 [2]
1956	9,959	5,744	964	3,702	1,831	1,894	8,391	1,364	27,166 [2]
1957	8,669	6,215	854	2,779	1,042	853	10,065 [2]	1,646	26,595
1958	8,998	6,228	920	3,321	1,068	1,195	10,678 [2]	1,920	27,824
1959	10,600	7,720	1,226	3,641	1,311	1,340	12,380 [2]	2,737	33,437
1960 P	10,367	7,913	1,349	3,795	1,342	1,462	13,185	2,727	34,192
All-Cargo Airlines									
1955	10,635	5,287	267	3,896	2,081	2,103	8,347	2,074	26,343
1956	21,677	11,662	1,614	6,353	3,883	3,454	15,304	3,155	53,879 [2]
1957	36,563	18,969	3,618	12,450	4,064	4,395	25,203 [2]	8,998	89,734
1958	31,929	17,903	2,503	8,878	2,612	4,388	19,145 [2]	9,172	78,149
1959	30,461	17,899	1,504	8,510	2,590	4,470	18,405 [2]	7,372	74,137
1960 P	33,635	18,513	1,790	9,658	3,243	4,703	19,826	7,999	79,973
CONSOLIDATED INDUSTRY									
1955	449,554	278,388	103,762	198,107	210,872	109,228	621,969	139,329	1,490,776 [2]
1956	522,265	343,855	121,242	227,614	248,795	125,344	722,995	149,168	1,742,072 [2]
1957	652,847	387,060	136,802	322,305	240,923	90,848	797,855 [2]	213,156	2,050,918
1958	666,689	412,037	145,103	341,742	253,692	93,510	843,265 [2]	207,130	2,129,121
1959	749,208	490,650	182,967	401,091	299,566	106,492	1,000,048 [2]	248,852	2,488,758
1960 P	811,142	556,686	207,654	452,204	333,687	117,438	1,121,180	314,567	2,803,575

[2] Total is greater than sum of individual expense categories since segregation of expenses is not reported by all carriers

SUMMARY OF

U. S. Scheduled Airline Industry

	Total Operating Revenues	Total Operating Expenses	Net Operating Income	Interest on Long-Term Debt	Other Non-Operating Income (Net)	Income Taxes	Net Profit or Loss [1]	Rate of Return on Investment [2] (%)	Profit Margin on Sales [3] (%)
Domestic Trunk Airlines									
1955	1,133,348	1,010,069	123,279	6,540	16,388	70,024	63,103	11.8	5.6
1956	1,262,831	1,162,230	100,601	9,964	23,917	56,842	57,712	9.4	4.6
1957	1,419,614	1,377,576	42,036	16,201	18,651	23,076	26,988	4.9	1.9
1958	1,513,249	1,418,123	95,126	24,456	20,588	44,723	44,794	6.3	3.0
1959	1,798,609	1,693,374	105,235	32,214	41,721	53,060	61,682	7.3	3.4
1960 P	1,942,634	1,907,786	34,848	43,757	31,756	18,213	1,188	2.9	0.1
Local Service Airlines									
1955	57,450	56,764	686	219	369	484	352	2.7	0.6
1956	67,712	68,293	(581)	376	106	(50)	(801)	(—)	(—)
1957	82,139	82,900	(760)	224	(472)	(51)	(1,153)	(—)	(—)
1958	94,953	93,336	1,617	808	267	394	1,137	7.9	1.2
1959	122,823	122,080	743	1,846	1,158	(177)	232	5.5	0.2
1960 P	146,831	145,063	1,768	2,694	582	281	1,620	7.8	1.1
Intra-Hawaiian Airlines									
1955	7,114	7,335	(221)	106	210	8	(125)	(—)	(—)
1956	7,430	7,307	123	97	(14)	.....	12	3.3	0.2
1957	8,360	8,081	278	109	376	53	267	11.0	3.2
1958	9,393	9,256	137	164	(5)	.....	(115)	1.2	(—)
1959	11,600	11,271	329	289	(11)	(37)	88	5.6	0.8
1960 P	14,731	14,813	(82)	477	33	.....	(521)	.....	.....
Helicopter Airlines									
1955	3,355	2,955	400	11	155	202	342	10.0	10.2
1956	3,711	3,656	55	23	(63)	8	(39)	(—)	(—)
1957	5,032	5,164	(131)	64	19	(55)	(111)	(—)	(—)
1958	6,289	5,962	327	94	15	113	491	11.4	7.8
1959	7,760	7,111	649	78	239	309	501	10.7	6.5
1960 P	8,601	8,382	219	43	35	92	150	3.3	1.7

P Preliminary. () Denotes reverse item.

[1] Net Profit or Loss for 1957, 1958, 1959 and 1960 is shown after "Special Items," which are not included in the detail. Therefore, the items do not add to the profit figures shown.

PROFIT OR LOSS

(In Thousands of Dollars)

	Total Operating Revenues	Total Operating Expenses	Net Operating Income	Interest on Long-Term Debt	Other Non-Operating Income (Net)	Income Taxes	Net Profit or Loss [1]	Rate of Return on Investment [2] (%)	Profit Margin on Sales [3] (%)
International and Overseas Airlines									
1955	384,304	365,604	18,700	1,700	6,754	10,320	13,434	6.3	3.5
1956	452,665	419,541	33,124	3,000	8,169	17,792	20,501	8.2	4.5
1957	487,948	460,868	27,080	4,882	8,619	13,252	19,520	7.8	4.0
1958	506,540	496,471	10,069	5,759	8,090	5,427	6,548	3.2	1.3
1959	565,456	547,348	18,108	8,407	13,305	10,092	12,917	4.7	2.3
1960 P	658,520	613,366	45,154	16,295	5,928	18,905	15,105	5.4	2.3
Alaskan Airlines									
1955	22,324	21,706	518	76	228	334	436	8.3	2.0
1956	29,352	27,166	2,186	222	(98)	870	996	15.1	3.4
1957	27,008	26,595	413	362	729	121	900	11.1	3.3
1958	28,924	27,824	1,100	418	350	673	391	5.7	1.4
1959	33,580	33,437	143	652	524	313	(298)	2.2	(—)
1960 P	36,681	34,192	2,489	547	211	792	866	8.1	2.4
All-Cargo Airlines									
1955	27,035	26,343	692	561	1,132	80	1,163	9.4	4.4
1956	52,860	53,879	(1,019)	488	4,539	1,210	1,822	7.0	3.4
1957	85,328	89,734	(4,406)	1,526	4,022	285	(2,207)	(—)	(—)
1958	76,851	78,149	(1,298)	1,672	1,655	1,351	(3,726)	(—)	(—)
1959	71,128	74,137	(3,009)	1,610	2,823	1,819	(3,615)	(—)	(—)
1960 P	74,554	79,973	(5,419)	1,806	(1,711)	(7)	(8,829)	(—)	(—)
CONSOLIDATED INDUSTRY									
1955	1,634,930	1,490,776	144,154	9,213	25,236	81,452	78,725	10.8	4.8
1956	1,876,561	1,742,072	134,489	14,170	36,556	76,672	80,203	8.8	4.3
1957	2,115,429	2,050,918	64,511	23,368	31,665	36,683	44,202	5.1	2.1
1958	2,236,199	2,129,121	107,078	33,215	30,960	52,681	49,520	5.2	2.2
1959	2,610,956	2,488,758	122,198	45,096	54,784	65,379	71,507	6.3	2.7
1960 P	2,882,552	2,803,575	78,977	65,619	36,834	38,276	9,579	3.3	0.3

[2] Net income before interest and after taxes as percent of average net worth and long-term debt.

[3] Profit as percent of revenues.

ASSETS, LIABILITIES AND

U. S. Scheduled Airline Industry

	1955	1956	1957	1958	1959	(Sept. 30) 1960
Domestic Trunk Airlines [1]						
Assets						
Current Assets	436,609	439,827	457,611	496,756	633,791	657,704
Investments and Special Funds	47,405	146,147	127,943	184,163	132,781	122,846
Flight Equipment	890,095	1,097,044	1,363,767	1,531,141	1,898,778	2,197,525
Reserve for Depreciation and Maintenance [3]	478,482	553,793	639,019	756,023	832,707	879,167
Airworthiness Reserve	.....	.....	.....	.....	.....	16,611
Ground Property and Equipment	154,104	180,613	206,452	237,840	279,017	309,230
Reserve for Depreciation	77,622	89,217	101,001	115,769	132,551	147,618
Other Property	28,402	41,359	49,667	100,445	105,920	84,789
Deferred Charges	9,459	13,264	23,541	28,566	55,342	70,020
Other Assets	1,175	6,308	.....	.....	.....	.....
Total Assets	1,011,145	1,281,552	1,488,961	1,707,119	2,140,371	2,398,718
Liabilities and Equity						
Current Liabilities	276,839	333,876	328,844	332,788	474,009	524,282
Long-Term Debt	198,916	324,071	469,486	588,730	804,579	961,491
Other Non-Current Liabilities	.....	.....	1,224	19,712	2,015	31,087
Operating Reserves	8,365	10,490	.....	.....	.....	.....
Deferred Credits	22,886	37,646	51,480	78,818	114,564	133,331
Stockholders' Equity—Net of Treasury Stock	504,139	575,469	637,927	687,071	745,204	748,527
Preferred Stock	29,789	16,592	15,805	24,000	19,071	18,883
Common Stock	80,172	88,555	108,502	111,473	116,627	118,505
Other Paid-In Capital	141,839	178,058	215,292	236,105	262,521	274,611
Retained Earnings	252,339	291,872	298,328	315,493	347,420	337,147
Total Liabilities and Equity	1,011,145	1,281,552	1,488,961	1,707,119	2,140,371	2,398,718
Local Service Airlines						
Assets						
Current Assets	12,970	14,873	16,512	20,003	29,897	34,543
Investments and Special Funds	950	1,438	3,028	2,894	2,055	2,209
Flight Equipment	21,451	26,105	32,949	46,308	67,202	75,740
Reserve for Depreciation and Maintenance [3]	11,096	12,628	16,825	20,445	25,090	23,872
Airworthiness Reserve	.....	.....	.....	.....	.....	4,862
Ground Property and Equipment	5,122	5,795	6,544	7,594	9,869	10,814
Reserve for Depreciation	2,555	2,949	3,556	4,119	4,870	5,548
Other Property	682	3,692	607	1,518	1,931	1,014
Deferred Charges	885	1,564	1,931	2,650	3,574	4,283
Other Assets	2	35	.....	.....	.....	.....
Total Assets	28,411	37,925	41,190	56,403	84,568	94,321
Liabilities and Equity						
Current Liabilities	12,461	17,431	22,002	25,134	34,214	37,977
Long-Term Debt	4,013	7,800	8,656	18,106	31,062	40,773
Other Non-Current Liabilities	.....	.....	205	363	4,072	1,517
Operating Reserves	783	1,138	.....	.....	.....	.....
Deferred Credits	21	303	264	220	293	332
Stockholders' Equity—Net of Treasury Stock	11,133	11,253	10,063	12,580	14,927	13,722
Preferred Stock	412	920	163	163	351	163
Common Stock	6,345	5,871	6,776	7,279	8,055	8,305
Other Paid-In Capital	4,324	4,891	4,863	5,733	7,180	7,183
Retained Earnings	52	(429)	(1,739)	(595)	(585)	(1,856)
Total Liabilities and Equity	28,411	37,925	41,190	56,403	84,568	94,321

[1] Balance sheet data for domestic trunk airlines reflect their international as well as domestic operations. They are not included in International and Overseas.

[2] Has been carried in the past as Territorial Airlines.

[3] Does not include maintenance reserve in 1960.

STOCKHOLDERS' EQUITY

(In Thousands of Dollars)

	1955	1956	1957	1958	1959	(Sept. 30) 1960
Intra-Hawaiian Airlines [2]						
Assets						
Current Assets	1,068	1,241	1,964	2,102	3,649	3,685
Investments and Special Funds	19	15	113	13	299	63
Flight Equipment	5,744	6,057	5,932	7,786	11,134	14,341
Reserve for Depreciation and Maintenance [3]	2,839	2,930	3,230	3,735	4,104	3,599
Airworthiness Reserve	.....	.....	.....	.....	.....	1,557
Ground Property and Equipment	1,177	1,276	1,354	1,501	1,777	1,948
Reserve for Depreciation	749	847	945	1,043	1,147	1,248
Other Property	41	17	133	77	144	220
Deferred Charges	180	169	182	633	859	1,370
Other Assets	.....	.....	.....	.....	.....	.....
Total Assets	4,641	4,998	5,503	7,334	12,611	15,223
Liabilities and Equity						
Current Liabilities	1,329	1,520	2,011	2,884	2,619	3,948
Long-Term Debt	1,835	1,702	1,635	2,681	6,164	7,762
Other Non-Current Liabilities	.....	.....	.....	.....	.....	.....
Operating Reserves	20	41	.....	.....	.....	.....
Deferred Credits	1	68	23	2	59	142
Stockholders' Equity—Net of Treasury Stock	1,456	1,667	1,834	1,767	3,769	3,371
Preferred Stock	.....	.....	.....	.....	1,625	1,622
Common Stock	1,981	1,981	1,981	1,287	1,304	1,307
Other Paid-In Capital	874	832	832	1,530	1,791	1,792
Retained Earnings	(1,399)	(1,146)	(979)	(1,050)	(951)	(1,350)
Total Liabilities and Equity	4,641	4,998	5,503	7,334	12,611	15,223
Helicopter Airlines						
Assets						
Current Assets	2,385	2,307	2,168	2,998	3,316	3,352
Investments and Special Funds	321	290	27	54	164	510
Flight Equipment	2,508	3,878	5,170	5,023	5,487	5,774
Reserve for Depreciation and Maintenance [3]	1,313	1,645	2,336	1,621	2,344	2,815
Airworthiness Reserve	.....	.....	.....	.....	.....	153
Ground Property and Equipment	312	576	777	825	893	927
Reserve for Depreciation	137	197	311	396	496	560
Other Property	14	71	1	4	55	27
Deferred Charges	163	196	302	429	481	513
Other Assets	.....	.....	.....	.....	.....	.....
Total Assets	4,253	5,476	5,798	7,316	7,556	7,575
Liabilities and Equity						
Current Liabilities	591	735	961	1,804	2,020	1,963
Long-Term Debt	87	817	1,033	1,319	696	354
Other Non-Current Liabilities	.....	.....	.....	1	1	47
Operating Reserves	31	45	.....	.....	.....	.....
Deferred Credits	25	69	109	6	152	244
Stockholders' Equity—Net of Treasury Stock	3,519	3,810	3,695	4,186	4,687	4,967
Preferred Stock	.....	.....	.....	.....	.....	.....
Common Stock	677	702	734	771	771	946
Other Paid-In Capital	2,201	2,435	2,546	2,685	2,686	2,644
Retained Earnings	641	673	415	730	1,230	1,377
Total Liabilities and Equity	4,253	5,476	5,798	7,316	7,556	7,575

ASSETS, LIABILITIES AND

U. S. Scheduled Airline Industry

	1955	1956	1957	1958	1959	(Sept. 30) 1960
International and Overseas Airlines [1]						
Assets						
Current Assets	109,019	111,560	102,202	116,391	147,151	185,719
Investments and Special Funds	33,230	37,987	52,992	93,310	110,962	64,377
Flight Equipment	216,737	265,785	276,758	306,428	407,448	539,247
Reserve for Depreciation and Maintenance [3]	99,787	114,074	132,185	149,995	173,881	189,376
Airworthiness Reserve	.....	.....	.....	.....	.....	9,134
Ground Property and Equipment	29,595	31,813	34,351	35,784	43,619	50,301
Reserve for Depreciation	18,424	18,614	20,741	22,348	23,943	26,426
Other Property	2,719	2,450	4,239	5,585	6,990	6,335
Deferred Charges	3,766	4,440	4,413	9,573	18,112	26,990
Other Assets	.....	.....	.....	.....	.....	.....
Total Assets	276,855	321,347	322,029	394,728	536,458	648,033
Liabilities and Equity						
Current Liabilities	80,041	92,352	87,424	65,298	108,491	133,481
Long-Term Debt	60,481	83,406	85,653	167,234	257,320	324,144
Other Non-Current Liabilities	.....	.....	1,011	775	1,486	2,286
Operating Reserves	3,319	3,584	.....	.....	.....	.....
Deferred Credits	5,846	6,058	6,648	8,445	9,839	25,627
Stockholders' Equity—Net of Treasury Stock	127,168	135,947	141,293	152,976	159,322	162,495
Preferred Stock	150	.....	.....	.....	.....	.....
Common Stock	13,622	13,792	16,310	15,462	16,970	17,089
Other Paid-In Capital	63,120	63,460	62,129	74,296	75,278	75,183
Retained Earnings	50,276	59,119	62,854	63,218	68,610	71,791
Total Liabilities and Equity	276,855	321,347	322,029	394,728	536,458	648,033
Alaskan Airlines						
Assets						
Current Assets	5,600	7,129	7,682	8,271	7,889	9,694
Investments and Special Funds	248	532	957	448	339	738
Flight Equipment	6,906	11,126	13,668	16,438	20,585	19,474
Reserve for Depreciation and Maintenance [3]	4,981	5,539	6,080	6,601	7,666	7,398
Airworthiness Reserve	.....	.....	.....	.....	.....	1,583
Ground Property and Equipment	3,808	4,201	4,843	5,009	5,220	5,391
Reserve for Depreciation	1,531	1,808	2,138	2,417	2,600	2,760
Other Property	163	400	313	2,355	358	232
Deferred Charges	358	422	624	590	579	563
Other Assets	138	134	.....	.....	.....	.....
Total Assets	10,709	16,597	19,869	24,093	24,704	24,351
Liabilities and Equity						
Current Liabilities	4,002	6,170	7,084	8,035	8,748	9,328
Long-Term Debt	765	3,360	4,942	7,565	7,640	5,683
Other Non-Current Liabilities	.....	.....	25	19	89	319
Operating Reserves	457	276	.....	.....	.....	.....
Deferred Credits	200	42	104	282	141	53
Stockholders' Equity—Net of Treasury Stock	5,285	6,749	7,714	8,192	8,086	8,968
Preferred Stock	.....	.....	.....	829	248	247
Common Stock	2,950	3,152	3,315	2,943	3,497	3,601
Other Paid-In Capital	3,605	3,613	3,629	3,655	3,694	3,695
Retained Earnings	(1,270)	(16)	770	765	659	1,444
Total Liabilities and Equity	10,709	16,597	19,869	24,093	24,704	24,351

[1] Balance sheet data for domestic trunk airlines reflect their international as well as domestic operations. They are not included in International and Overseas.

[2] Has been carried in the past as Territorial Airlines.

[3] Does not include maintenance reserve in 1960.

STOCKHOLDERS' EQUITY

(As of Sept. 30, 1960, In Thousands of Dollars)

	1955	1956	1957	1958	1959	(Sept. 30) 1960
All-Cargo Airlines						
Assets						
Current Assets	11,716	21,224	19,589	20,152	20,440	14,940
Investments and Special Funds	2,850	17,244	4,629	3,337	20,522	29,531
Flight Equipment	24,143	31,540	65,449	55,702	59,118	47,283
Reserve for Depreciation and Maintenance [3]	7,575	9,188	17,500	17,522	22,332	18,664
Airworthiness Reserve	.....	.....	.....	.....	.....	1,388
Ground Property and Equipment	2,753	4,666	5,578	4,499	4,214	4,134
Reserve for Depreciation	1,354	1,833	2,382	2,257	2,378	2,336
Other Property	399	3,028	2,682	4,533	701	1,674
Deferred Charges	410	2,706	5,122	4,963	2,233	1,833
Other Assets	140	281	.....	.....	.....	.....
Total Assets	33,482	69,668	83,167	73,407	82,518	77,007
Liabilities and Equity						
Current Liabilities	10,759	19,301	25,991	22,500	22,001	17,717
Long-Term Debt	7,598	16,813	25,121	17,509	28,247	37,375
Other Non-Current Liabilities	.....	.....	449	1,900	1,461	929
Operating Reserves	1,808	2,311	.....	.....	.....	.....
Deferred Credits	235	2,277	3,257	3,325	3,030	2,459
Stockholders' Equity—Net of Treasury Stock	13,082	28,966	28,349	28,173	27,779	18,527
Preferred Stock	1,211	1,441	1,437	1,437	1,193	991
Common Stock	5,466	6,863	8,237	8,901	10,303	10,626
Other Paid-In Capital	4,304	14,341	15,701	19,257	22,269	20,381
Retained Earnings	2,101	6,321	2,974	(1,422)	(6,077)	(13,466)
Total Liabilities and Equity	33,482	69,668	83,167	73,407	82,518	77,007
CONSOLIDATED INDUSTRY						
Assets						
Current Assets	579,367	598,161	607,728	666,673	846,133	909,637
Investments and Special Funds	85,023	203,653	189,689	284,219	267,122	220,274
Flight Equipment	1,167,584	1,441,535	1,763,693	1,968,826	2,469,752	2,899,384
Reserve for Depreciation and Maintenance [3]	606,073	699,797	817,175	955,942	1,068,124	1,124,891
Airworthiness Reserve	.....	.....	.....	.....	.....	35,288
Ground Property and Equipment	196,871	228,940	259,899	293,052	344,609	382,745
Reserve for Depreciation	102,372	115,465	131,074	148,349	167,985	186,496
Other Property	32,420	51,017	57,642	114,517	116,099	94,291
Deferred Charges	15,221	22,761	36,115	47,404	81,180	105,572
Other Assets	1,455	6,758	.....	.....	.....	.....
Total Assets	1,369,496	1,737,563	1,966,517	2,270,400	2,888,786	3,265,228
Liabilities and Equity						
Current Liabilities	386,022	471,385	474,317	458,443	652,102	728,696
Long-Term Debt	273,695	437,969	596,526	803,144	1,135,708	1,377,582
Other Non-Current Liabilities	.....	.....	2,914	22,770	9,124	36,185
Operating Reserves	14,783	17,885	.....	.....	.....	.....
Deferred Credits	29,214	46,463	61,885	91,098	128,078	162,188
Stockholders' Equity—Net of Treasury Stock	665,782	763,861	830,875	894,945	963,774	960,577
Preferred Stock	31,562	18,953	17,405	26,429	22,488	21,906
Common Stock	111,213	120,916	145,855	148,116	157,527	160,379
Other Paid-In Capital	220,267	267,630	304,992	343,261	375,419	385,489
Retained Earnings	302,740	356,394	362,623	377,139	410,306	395,087
Total Liabilities and Equity	1,369,496	1,737,563	1,966,517	2,270,400	2,888,786	3,265,228

REVENUE PASSENGERS CARRIED

U. S. Scheduled Airline Industry
(For Selected Years, In Thousands of Passengers)

	1939	1949	1951	1952	1953	1954	1955	1956	1957 [2]	1958 [2]	1959 [2]	1960 [2]
Domestic Trunk Airlines	1,713	14,021	20,621	22,759	26,137	29,526	34,511	37,598	40,270	39,513	44,489	45,199
Local Service Airlines	.....	678	1,481	1,736	2,032	2,423	2,897	3,453	3,943	4,265	5,214	5,591
Intra-Hawaiian Airlines	22	382	550	515	553	561	591	627	589	572	755	857
Helicopter Airlines	.....	.....	.....	.....	1	9	29	62	148	228	366	490
International and Overseas Airlines	129	1,520	2,038	2,362	2,682	2,888	3,376	3,888	4,065	4,176	4,707	5,202
Alaskan Airlines [1]	n.a.	122	157	194	220	225	264	315	309	313	344	370
TOTAL SCHEDULED AIRLINE INDUSTRY	1,864	16,723	24,847	27,566	31,625	35,632	41,623	45,943	49,339	49,067	55,875	57,709
AVERAGE LENGTH OF HAUL (Statute Miles)												
Domestic Trunk Airlines	397	469	495	533	547	550	557	576	608	618	632	647
International and Overseas Airlines	557	1,351	1,275	1,278	1,261	1,296	1,307	1,315	1,415	1,429	1,465	1,564

[1] Alaskan data for 1949 include charter flights. 1939 not available.

[2] Beginning in 1957 passengers were reported on a basis which yielded slightly lower figures than the basis used in prior years. This accounts in part for the typical increase of average length of haul in 1957 as compared to 1956.

AVERAGE REVENUE PER PASSENGER MILE

Intercity Common Carriers
(For Selected Years, In Cents per Mile)

	1939	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Domestic Scheduled Airlines [1]													
Coach or Tourist	.....	3.96	4.10	4.45	4.18	4.13	4.34	4.32	4.29	4.25	4.52	4.63	5.01
All Services	5.28	5.75	5.54	5.59	5.54	5.43	5.37	5.32	5.28	5.25	5.58	5.83	6.01
International Scheduled Airlines													
Coach or Tourist	.....	.....	.....	.....	.....	5.77	5.83	n.a.	n.a.	5.77	5.66	5.52	5.57
All Services	8.57	7.72	7.28	7.13	7.04	6.88	6.79	6.68	6.70	6.57	6.51	6.44	6.34
Railroads, Class I [2]													
First Class	2.33	3.14	3.25	3.27	3.35	3.38	3.35	3.31	3.39	3.68	3.75	3.84	3.84
Coach	1.80	2.41	2.47	2.47	2.53	2.53	2.50	2.47	2.56	2.71	2.76	2.77	2.77
Intercity Motor Buses, Class I	1.55	1.85	1.89	1.95	2.03	2.06	2.08	2.06	2.13	2.29	2.42	2.56 [3]	2.61 [3]

[1] Trunk airlines, preliminary.

[2] 10 months 1960. Excludes commutation. Does not include payments to Pullman Company for seat, berth, etc.

[3] ATA estimate.

n.a. Not available.

TREND OF REVENUE PASSENGER MILES BY CLASS OF SERVICE

U. S. Scheduled Airlines
(In Millions)

	Domestic *			International and Overseas			
	Coach	First Class	Total	Economy	Tourist	First Class	Total
1951	1,278	9,223	10,501	.....	416	2,196	2,612
1952	2,356	10,104	12,460	.....	803	2,257	3,060
1953	3,719	10,968	14,687	.....	1,426	2,014	3,440
1954	5,321	11,374	16,695	.....	2,202	1,597	3,799
1955	6,716	13,024	19,740	.....	2,796	1,692	4,488
1956	8,074	14,202	22,276	.....	3,377	1,836	5,213
1957	9,510	15,736	25,246	203	3,636	2,017	5,856
1958	10,076	15,180	25,256	1,343	2,758	2,023	6,124
1959	12,304	16,847	29,151	2,130	2,757	2,177	7,064
1960	14,417	15,957	30,374	3,037	3,162	2,107	8,306

* Trunkline and Local Service

DOMESTIC INTERCITY PASSENGER MILES

(For Selected Years, In Millions)

	1939	1949	1955	1956	1957	1958	1959	1960
Railroad Travel: [1]								
First Class	7,527	9,349	6,440	6,275	5,185	4,249	3,773	3,650 [5]
Coach	11,180	20,310	17,329	17,105	16,365	14,230	13,749	13,200 [5]
Air Travel: [2]								
First Class	654	6,454	13,025	14,202	15,736	15,180	16,847	15,957
Coach	.....	251	6,716	8,074	9,510	10,076	12,304	14,418
Motor Bus Travel [3]	9,100	22,411	16,562	16,409	16,377	15,083	14,400 [5]	14,400 [5]
Total Common Carriers [6]	28,461	58,775	60,072	62,065	63,173	58,818	61,073	61,625
Airline Share of Total	2.3	11.4	32.9	35.9	40.0	42.9	47.7	49.3
Private Automobile, Intercity [4]	234,700	376,313	585,800	617,700	644,800	629,496	659,435	660,000 [5]
Total Common Carrier and Auto	263,161	435,088	645,872	679,765	707,973	688,314	720,508	721,625
Airline Share of Total Intercity Travel	0.2	1.5	3.1	3.3	3.6	3.7	4.0	4.2

1 I.C.C., Statistics of Railways in the United States.
2 1939, CAB, Annual Airline Statistics; 1949, CAB, Recurrent Reports on Traffic Statistics; 1955-1960, Trunk and Local Service Airlines.
3 1939, I.C.C. Statement No. 531, Jan. 1953; 1949-1957, I.C.C. Transport Economics, Jan. 1960, Class I, II and III Interstate Operators.
4 1939, NAMBO, Bus Facts, 20th Edition; 1949-1956, I.C.C. Transport Economics, May 1956 and Dec. 1959, Annual Reports of I.C.C.
5 Estimated.
6 Scheduled services.

AIRCRAFT OPERATIONS AT FAA AIRPORT TOWERS

1950-1960 (In Thousands)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Type of Flight Operation											
Military	2,384	2,852	2,983	3,712	4,409	4,957	5,472	5,910	5,565	4,545	3,784
General Aviation	9,585	9,618	7,965	7,719	8,015	8,540	10,021	12,129	14,037	15,008	14,826
Air Carrier	4,002	4,556	4,866	5,384	5,521	5,983	6,553	7,112	6,998	7,353	7,164
Total	15,971	17,026	15,814	16,815	17,945	19,480	22,046	25,151	26,600	26,906	25,774
% Air Carrier of Total	25.1	26.8	30.8	32.0	30.8	30.7	29.7	28.3	26.3	27.3	27.8

Air Carriers include scheduled and non scheduled operations. Each landing is counted as an operation as is also each take off.

COMPARATIVE TRANSPORT SAFETY RECORD

Passenger Fatality Rate per 100,000,000 Passenger Miles *(For Selected Years)*

	1939	1949	1952	1953	1954	1955	1956	1957	1958	1959	1960
Domestic Scheduled Airlines [1]											
Fatalities	9	93	46	86	16	156	143	30	113	211	336
Rate	1.20	1.39	.37	.59	.10	.79	.64	.12	.45	.72	1.10
International and Overseas Scheduled Airlines [2]											
Fatalities	10	4	94	2	0	2	9	40	11	59	1
Rate	12.80	.19	2.98	.06	.....	.04	.17	.67	.18	.86	0.01
Total U. S. Scheduled Airlines											
Fatalities	19	97	140	88	16	158	152	70	124	270	337
Rate	2.28	1.00	0.86	0.46	0.07	0.62	0.50	0.20	0.38	0.71	0.86
Motor Buses											
Fatalities	[3]	130	120	100	60	90	80	90	120	100	n.a.
Rate	[3]	.23	.21	.18	.11	.18	.16	.17	.24	.18	n.a.
Railroad Passenger Trains											
Fatalities	32	29	14	50	23	19	57	17	62	12	32 [4]
Rate	.14	.08	.04	.16	.08	.07	.20	.07	.27	.05	.15 [4]
Passenger Autos and Taxis											
Fatalities	16,300	17,700	23,300	23,900	22,700	25,100	26,600	25,600	24,200	24,800	n.a.
Rate	3.7	2.7	3.0	2.9	2.7	2.7	2.7	2.6	2.3	2.3	n.a.

[1] Alaskan and Hawaiian data included in Domestic beginning in 1959.
[2] Alaska data not included in 1939.
[3] Motor Bus statistics in 1939 included in Passenger Autos and Taxis.
[4] Preliminary
n.a. Not Available

POST OFFICE PROFIT ON DOMESTIC AIRMAIL

Fiscal Year	Post Office Receipts, Domestic Airmail Postage (000)	Payment to Airlines for Domestic Airmail Service [1] (000)	Other Post Office Expenses, Domestic Airmail [2] (000)	Post Office Profit on Domestic Airmail (000)
1950	$ 74,120	$63,639	$ 45,983	($35,502)
1955	142,571	42,780	79,524	20,267
1956	150,938	44,304	88,818	17,816
1957	153,189	45,913	91,607	15,669
1958	151,236	46,858	96,040	8,338
1959	173,979	55,571	96,953	21,455
1960	180,317	59,797	101,537	18,983

[1] Payments to domestic and U. S.-Flag international airlines for hauling domestic airmail within continental United States and to off-shore states or territories. This is a Post Office allocation.
[2] Cost of postal services other than air transport of domestic airmail. Includes relatively small payments to surface carriers for hauling airmail and payments to airlines for hauling classes of mail other than airmail.

Source: U. S. Post Office Department, "Cost Ascertainment Report," for years shown.

AIRCRAFT OWNED AND ON ORDER

By U. S. Scheduled Airline Industry
(For Selected Years)

Manufacturer	Model	1939	1949	1952	1956	1959	1960	New aircraft on order for delivery in: 1961	1962
Armstrong-Whitworth:	Argosy (Turboprop)	....	....	....	....	....	1	6	....
Boeing:	247D, 307B, 314	45	5	....	....	....	....	....	....
	377	....	35	44	34	21	3	....	....
	B707 (Jet)	....	....	....	....	66	93	9	....
	B720 (Jet)	....	....	....	....	....	21	50	11
	B727 (Jet)	....	....	....	....	....	....	....	60 [1]
Canadair:	CL44 (Turboprop)	....	....	....	....	....	....	17	....
Convair:	240	....	112	113	100	46	51	....	....
	340	....	....	8	123	122	117	....	....
	440	....	....	....	19	36	31	....	....
	540 (Turboprop)	....	....	....	....	1	10	....	....
	600 (Jet)	....	....	....	....	....	....	15	10
	880 (Jet)	....	....	....	....	....	29	11	....
Curtiss:	C-46	....	2	75	94	66	42	....	....
Douglas:	DC-2	56	....	....	....	....	....	....	....
	DC-3	147	449	419	356	305	276	....	....
	DC-4	....	230	185	143	73	52	....	....
	DC-6	....	109	195	299	325	301	....	....
	DC-7	....	....	....	132	220	217	....	....
	DC-8 (Jet)	....	....	....	....	18	81	14	....
Fairchild:	F-27 (Turboprop)	....	....	....	....	....	44	....	....
Lockheed:	L-10	41	6	....	....	....	....	....	....
	Lodestar	....	11	11	10	....	....	....	....
	Other early models	6	....	....	....	....	....	....	....
	Constellation	....	79	115	117	104	75	....	....
	Super Constellation	....	....	24	79	137	129	....	....
	Electra (Turboprop)	....	....	....	....	....	117	16	....
Martin:	202	....	24	21	23	19	15	....	....
	404	....	....	96	97	85	80	....	....
Sikorsky:	All Types	28	....	....	....	....	....	....	....
Sud Aviation:	Caravelle (Jet)	....	....	....	....	....	....	19	1
Vickers:	V-700 (Series) (Turboprop)	....	....	....	54	67	61	....	....
	V-800 (Series) (Turboprop)	....	....	....	....	15	13	....	....
Other		24	10	17	25	15	24	....	....
Total Fixed Wing		347	1,072	1,323	1,705	1,871	1,883	157	82
Helicopters:									
Bell:	B47	....	6	6	7	5	5	....	....
Sikorsky:	S51	....	5	3	2	2	2	....	....
	S55	....	....	5	8	5	5	....	....
	S58	....	....	....	3	6	7	....	....
	S61 (Turbine)	....	....	....	....	....	....	7	2
	S62 (Turbine)	....	....	....	....	....	1	....	....
	V44B	....	....	....	....	5	5	....	....
	V107 (Turbine)	....	....	....	....	....	....	5	5
Total Helicopters		....	11	14	20	23	25	12	7

[1] Scheduled for delivery beginning in 1963.

PERSONNEL EMPLOYED

By the Scheduled Airline Industry [1] *(1940-1960)*

Year (Dec. 31)	Pilots and Copilots	Other Flight Personnel	Pursers, Stewards, Stewardesses	Communications Personnel	Mechanics	Aircraft and Traffic Servicing Personnel	Office Employees	All Others	Total
1940	2,279	33	1,036	193	5,413	4,277	7,689	1,131	22,051
1941	2,664	49	1,210	220	6,389	4,931	9,710	1,285	26,458
1942	3,146	241	1,131	1,610	12,882	7,384	11,083	2,236	39,713
1943	2,332	330	992	2,196	10,411	5,191	12,832	4,995	39,279
1944	3,345	277	1,516	2,501	9,963	5,748	15,234	4,023	42,607
1945	5,897	1,046	2,486	3,477	15,943	9,447	23,904	6,081	68,281
1946	7,220	1,503	4,421	5,031	23,376	12,770	31,587	10,646	96,554
1947	6,637	1,333	4,077	3,829	21,140	11,610	32,691	3,835	85,152
1948	6,926	1,515	4,142	3,661	21,828	11,662	31,145	3,729	84,608
1949	6,843	1,602	4,341	3,581	19,535	11,674	30,148	3,270	80,994
1950	7,277	1,521	4,427	3,403	19,606	12,256	31,138	3,158	82,786
1951	8,386	1,708	5,303	3,618	23,477	14,370	35,081	3,810	95,753
1952	8,770	1,852	5,859	3,653	26,162	15,588	37,894	4,294	104,072
1953	9,437	2,146	6,106	3,567	26,105	17,353	40,319	4,359	109,392
1954	9,495	2,525	6,363	3,332	25,173	17,855	40,670	4,128	109,541
1955	10,857	2,762	7,454	3,499	29,196	19,114	45,030	4,291	122,203
1956	11,386	3,384	8,097	3,605	30,962	20,657	49,336	4,076	131,503
1957	13,286	3,797	9,450	4,004	31,162	36,052	31,799	17,640	147,190
1958	12,897	3,667	9,811	3,978	29,580	37,256	32,003	17,958	147,150
1959	14,471	4,075	10,902	4,390	32,823	43,839	32,324	21,346	164,170
1960 [P]	13,494	3,934	10,640	4,231	34,449	44,246	32,624	22,790	166,408

[1] Data for Alaskan and All-Cargo carriers not included prior to 1959.

[P] Preliminary

U.S. AIRLINES' SHARE OF AIR TRAVEL

Between The United States and Foreign Countries [A] *(Thousands of Passengers)*

	1950	1955	1956	1957	1958 [B]	1959 [B]	1960 [C]
Total Passengers to and from U. S.	2,163	3,422	3,884	4,315	5,075	5,754	6,369
By Air	1,094	2,207	2,643	3,053	3,827	4,338	4,880
By Sea	1,069	1,215	1,241	1,262	1,248	1,416	1,489
Air Share of Total (Percent)	50.6	64.5	68.0	70.8	75.4	75.4	76.6
Air Passengers via U. S.-Flag Airlines	818	1,508	1,763	1,911	2,207	2,461	2,525
Air Passengers via Foreign-Flag Airlines	276	699	880	1,142	1,620	1,877	2,354
U. S.-Flag Share of Total Air Passengers (Percent)	74.7	68.3	66.7	62.6	57.7	56.7	51.8

[A] Exclusive of travel over land borders (except Mexican air travel), crewmen, military personnel, and travelers between continental United States and its possessions.

[B] Calendar year figures for 1960, 1959 and 1958; Fiscal year figures 1950-57.

[C] Partly estimated.

Source: U. S. Department of Justice, Immigration and Naturalization Service, "Report of Passenger Travel Between the United States and Foreign Countries."

CLASSES OF UNITED STATES COMMERCIAL AIR CARRIERS

There are nine generally recognized classes of operators in the air transport industry of the United States. These classifications are used by the Civil Aeronautics Board in connection with the economic regulation of the industry and under the Federal Aviation Act are based largely on the scope of operations authorized or allowed by that Act. Classes One to Seven have certificates of convenience and necessity authorizing them to conduct regularly scheduled services.

1. **The Domestic Trunk Lines** include those carriers which presently have permanent operating rights within the continental United States. There are currently twelve trunk lines, most of which operate high-density traffic routes between the principal traffic centers of the United States.

American	Continental	National	Trans World
Braniff	Delta	Northeast	United
Capital [6]	Eastern	Northwest	Western

2. **The Domestic Local Service Lines** have, with one exception, been certificated since 1945. These carriers operate routes of lesser traffic density between the smaller traffic centers and between these centers and principal centers. The thirteen local service lines in 1960 were:

Allegheny	Lake Central	Ozark	Southern
Bonanza	Mohawk	Pacific	Trans Texas
Central	North Central	Piedmont	West Coast
Frontier			

3. **The Intra-Hawaiian Carriers** operate between the several islands comprising the State of Hawaii.

Aloha	Hawaiian

4. **The Alaskan Carriers** provide service among the continental United States and the State of Alaska and within Alaska.

Operating between continental U. S. and Alaska		Operating within Alaska	
Alaska	Pacific Northern	Alaska	Kodiak
Northwest [1]	Pan American [1]	Alaska Coastal	Northern Consolidated
		Bristol Bay [2] [3]	Pacific Northern
		Cordova	Reeve Aleutian
		Ellis	Western Alaska
		Howard J. Mays [2]	Wien

5. **The Helicopter Carriers** presently operate between airports, central post offices, and suburbs of New York, Chicago and Loss Angeles. Originally certificated as exclusive mail carriers they now fly passengers, airfreight and air express, in addition to U. S. mail.

Chicago Helicopter Airways	Los Angeles Airways	New York Airways

6. **The International and Overseas Lines** include all U. S.-Flag air carriers operating between the United States and foreign countries other than Canada, and over international waters. Some of these carriers conduct operations between foreign countries and some are extensions of domestic trunk lines into Mexico and the Caribbean and to Alaska and Hawaii.

Alaska [5]	Eastern	Pan American	Transportation Corp. of America
American	Mackey [2]	Pan American-Grace	Trans World
Braniff	National	Resort [2] [4]	United
Caribbean Atlantic	Northwest	Samoan [2]	Western
Delta	Pacific Northern [6]	South Pacific [2]	

7. **The All-Cargo Lines** operate under temporary certificates authorizing scheduled cargo flights between designated areas in the U. S., and in one case to the Caribbean and in another to Europe.

AAXICO	Flying Tiger	Seaboard & Western
Aerovias Sud Americana	Riddle	Slick

8. **Supplemental Air Carriers** are authorized unlimited domestic charter operations and up to 10 flights per month individually ticketed or waybilled between any two domestic points. As of March 1, 1961, there were 35 carriers authorized for this service.

9. **Others.** What might be termed a tenth classification includes a single carrier, Avalon Air Transport, Inc., a certificated route carrier operating between Los Angeles and Santa Catalina.

Among other classes of operators are the air taxi operators and airfreight forwarders. Air taxi operators are authorized through the exemption process and can operate aircraft up to a gross weight of 12,500 pounds. There are 2,618 authorized. Airfreight forwarders also operate under exemption authority. There are 75 forwarders operating in domestic interstate and foreign and overseas commerce.

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[1] Statistical data of these carriers are included with International and Overseas Airlines.
[2] Certificated non-mail carriers.
[3] Not operating.
[4] Certified cruise carrier.
[5] Statistical data of these carriers are included with Alaskan Airlines.
[2] [3] [4] Statistical data of these carriers are not included in the statistical tables.
[6] In 1961 CAB authorized the merger of Capital Airlines with United Air Lines.

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Twenty-Second Edition

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Continued from page 114

improving the airline's "on time" record. In addition to base pay, which ranges from $820 to $960 for one to eight year pilots respectively, pilots receive 7¢ a mile for flying 7500 to 9000 miles and 10¢ above 9000. Copilot base pay ranges from $425 to $635 plus 3¢ a mile up to 9000 miles. Above 9000, copilots receive 5¢ a mile.

Contracts—ALPA has signed a three-year pilots' contract with Trans-Texas which gives wage increases but which does not include the duty-rig controversy issue which has prolonged negotiations between the company and union. ALPA said three-year contracts are rare, but the Trans-Texas case was considered an "isolated situation."

Southern dispute—The CAB Bureau of Enforcement has upheld Southern Airways' contention that it bargained in good faith from the beginning of negotiation until its June 5 pilot strike and from the strike through July 28.

MISCELLANY

First-class mail—Postmaster General J. Edward Day told the House Appropriations Committee that no expansion of the 35,000-ton annual first-class mail by air program is currently planned, although some route modifications may be made.

Shuttle bus—Eastern Air Lines will establish "Air Shuttle" service between New York and Boston and New York to Washington at 8 a.m. and 10 p.m., if CAB approves. Fares would be $14 New York-Washington and $12 New York-Boston, tax included.

Evaluation—Lake Central Airlines has begun a route evaluation with the Vertol 107 twin-turbine helicopter to see how the 107 "checks out as a vehicle designed to serve the city-center to city-center passenger travel market in a number of large metropolitan areas."

United-Capital merger—United president W. A. Patterson has said the integrated United Air Lines will offer 30% more capacity at the peak of 1961 than the two airlines offered separately at the 1960 peak. He said United will put some of its aircraft on Capital's routes but will not flood the markets. Service development will be gradual. Integrated schedules will not begin until July 1.

New route award—CAB granted Eagle Airways (Bahamas) Ltd. authority to operate between the Bahama Islands and Miami, Palm Beach, Fort Lauderdale and Tampa, via Havana. The decision upheld "the public interest in the development of an air transportation system properly adapted to the present and future needs of our nation" despite "significant" diversion of traffic to Mackey Airlines.

Subsidy—CAB has estimated $84,324,000 in total subsidy for air carrier operations, including $1 million for the development of new routes for local service carriers, for fiscal 1962. The figures appeared in the Board's 10th annual report. It also estimated 78,364,000 nonpriority mail ton-miles.

Cargo container—A new type of cargo container designed to fit unoccupied seats in passenger aircraft for transport of mail and small packages has been placed in operation on Pan American's New York-London routes. Four of the collapsible containers are installed just prior to departure. Each container can accommodate up to 490 lbs. of cargo.

ELECTRONICS

Technical pool—A long-term, exclusive agreement with Marconi's Wireless Telegraph Co., Ltd., of England has been signed by Wilcox Electric Co., Inc., to "pool the technical resources and long experience of the two concerns in the field of aviation electronic equipment." The two-way flow of design, engineering and production information is expected to strengthen the position of both companies. It effectively triples the R&D staff available to Wilcox.

Just a month ago Wilcox announced a long-term agreement with EKCO Electronics, Ltd., to produce weather radar equipment.

Viscount doppler—The first installation of a Collins doppler radar navigation system in a Vickers Viscount was completed recently by The Garrett Corp's AiResearch Aviation Service Division at Los Angeles International Airport. The aircraft is owned by the Tennessee Gas Transmission Co. and is used for flights to South America.

Avionics division—Formation of an Avionics Service Dept. at ITT Federal Laboratories, Nutley, N.J., was disclosed as a move to tighten company's responsibilities to customers of air navigation gear. Named to manage the new department is Frank W. Norlander, a specialist in aviation electronics.

Transponder characteristic—Aeronautical Radio, Inc., has released the final "gray" draft of Characteristic 532C, for "Air Traffic Control Transponder" covering technical requirements for radar beacon transponders to be placed aboard transports and executive aircraft operating in controlled airspace.

Continued on next page

COMING, May, 1961

May 3-5—American Helicopter Society, 17th annual national forum, Sheraton-Park Hotel, Washington, D.C.
May 8-12—Airport Operators Council, annual membership meeting, Miami Beach.
May 8-10—IRE, national aeronautical electronics conference, Miami & Dayton Biltmore Hotels, Dayton, Ohio.
May 10-12—American Society of Civil Engineers, Airport Operators Council, joint airport conference, Carillon Hotel, Miami Beach.
May 15—National Fire Protective Assn., aviation fire safety seminar, Hilton Statler Hotel, Detroit, Michigan.
May 15-18—Society of Aeronautical Weight Engineers, 20th national conference, Sheraton Hotel, Akron, Ohio.
May 16-17—Kentucky Aviation Conference, Brown Hotel, Louisville, Ky.
May 17—IATA, financial committee, Montreal.
May 23-25—ATA, purchasing committee, Drake Hotel, Chicago.
May 24-26—IATA, executive committee, New York.
May 26-June 4—International Air Show, Paris.

June

June 2-3—Reading Aviation Service, 12th national maintenance and operations meeting, Municipal Airport, Reading, Pa.
June 11-15—ASME, summer meeting, Statler Hilton, Los Angeles.
June 12-13—IRE, 3rd national symposium on radio frequency interference, Sheraton-Park Hotel, Washington, D.C.
June 13-15—Aviation Distributors & Mfrs. Assn., 37th meeting, Dennis Hotel, Atlantic City, N.J.
June 13-16—IAS, summer meeting, Los Angeles.
June 19-24—ICAO, council assembly, Montreal.
June 21-23—Airlines Electronic-Engineering Committee, general meeting, Hotel Saxony, Miami Beach.
June 28 to 30—Institute of Navigation, annual meeting, Williamsburg Inn, Williamsburg, Va.

July

July 17—National Aeronautical Services Assn., USAF contract services symposium, Hotel Washington, Washington, D.C.
July 24-26—Electronic Maintenance Engineering Assn., air traffic control facilities symposium, Mayflower Hotel, Washington, D.C.

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Automatic weather—Electronic devices which automatically measure cloud height and other additional weather factors for coded transmission to other cities are under development by The Siegler Corp.'s Olympic Radio and Television Div.

Marconi doppler—British Overseas Airways Corp. has picked Marconi doppler navigators for its fleet of 19 Comets. Unit to be installed is type AD2300A.

Experimental ATC—The British Ministry of Aviation has placed a contract with Elliott Brothers (London) Ltd. for experimental air traffic control equipment to be installed at the Air Traffic Control Experimental Unit. The unit will include an Elliott 502 stored program computer.

Royston recorder—Lockheed Aircraft Service, Inc., has received a manufacturing license from Royston Instruments, Ltd., of Byfleet, England, to make and market the Midas magnetic tape flight recording system in the Western Hemisphere and Australia. LASI has been a U.S. sales agent for Royston since April, 1960.

FAA gear—Vitro Corp. of America has received an FAA contract for the purchase of a marker beacon transmitter, compass locater transmitters, antenna and feeder assemblies and related equipment.

Airport lighting—Yugoslav authorities have placed an order for airport lighting equipment with The General Electric Co., Ltd., of England. The contract covers a complete airfield lighting installation with high-intensity runway and approach lights, taxiway lights, transformers, constant-current regulators, switching and control gear.

CL-44 Joins CRAF Fleet

The Defense Air Transportation Administration has revised Civil Reserve Air Fleet allocations to cover CL-44 aircraft. First CL-44s, modified to CRAF specifications, are to be delivered in June. They will be introduced to CRAF as rapidly thereafter as possible.

The present allocation is as follows:

Aerovias Sud Americana	2 DC-6A
Alaska Airlines	2 DC-6A
American Airlines	6 DC-7(F)
Braniff Airways	1 DC-6A
California Hawaiian Airlines	2 DC-4
Capitol Airways	1 L-1049H
The Flying Tiger Line	12 L-1049H
National Airlines	4 L-1049H
Great Lakes Airlines	1 DC-6A
Northwest Airlines	1 DC-4
	5 DC-6A
	5 DC-8
Overseas National Airways	4 DC-6A
Pan American World Airways	17 DC-4
	10 DC-7C(F)
	22 B-707 (300 series)
	18 DC-8
Resort Airlines	1 DC-4
Riddle Airlines	7 DC-7C(F)
Seaboard and Western Airlines	8 L-1049H
Slick Airways	5 L-1049H
Southern Air Transport	2 DC-6A
Trans Caribbean Airways	1 DC-6A
Trans International Airlines	2 L-1049H
Trans World Airlines	5 L-1049H
	6 L-1649A(F)
	12 B-707 (300 series)
United Air Lines	7 DC-6A
	6 DC-7(F)
	11 DC-8
United States Overseas Airlines	10 DC-4
	2 DC-6A
World Airways	3 DC-4
	4 DC-6A
	4 L-1049H

Contingency Fleet Allocations

Northwest Airlines	10 DC-7C
Pan American World Airways	14 DC-7C
	6 B-707 (100 series)
Trans World Airlines	14 L-1649A
United Air Lines	3 DC-8

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Agency—Gene Wyble Adv.

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Agency—Young & Rubicam, Inc.

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Agency—MacManus, John & Adams, Inc.

BOEING AIRPLANE CO. 4, 82
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Agency—Hal Stebbins Inc.

BRANIFF INT'L AIRWAYS 34
Agency—Cunningham & Walsh Inc.

BRITISH AIRCRAFT CORP. 69-72
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Agency—W. D. Lyon Co.

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Agency—J. Walter Thompson Co.

CONTINENTAL DEVELOPMENT CORP. 91

DELTA AIR LINES, INC. 102
Agency—Burke Dowling Adams, Inc.

EASTERN AIR LINES, INC. 115
Agency—Fletcher Richards, Calkins & Holden

ERWIN-NEWMAN CO. 18, 19
Agency—Rex Potter, Inc.

FLIGHTEX FABRICS, INC. 151
Agency—The Powerad Co.

FRONTIER AIRLINES, INC. 77
Agency—Rippey, Henderson, Bucknum & Co.

GARSITE PRODUCTS, INC. 92
Agency—Pike & Becker Inc.

GENERAL ELECTRIC CO., FLIGHT PROPULSION DIV. 23, 24, 25
Agency—George R. Nelson, Inc.

B. F. GOODRICH CO. 90
Agency—The Griswold-Eshleman Co.

HAWKER SIDDELEY AVIATION DIV., ARMSTRONG WHITWORTH AIRCRAFT, LTD. 30, 31
Agency—Batten, Barton, Durstine & Osborn

C. G. HOKANSON CO., INC. 76
Agency—The Essig Co.

INTERNATIONAL AVIATION CORP. 112
Agency—Baxter & Grim

LEAR, INC., ASTRONICS DIV. 26
Agency—Getz & Sandborg, Inc.

LOCKHEED AIRCRAFT CORP., GEORGIA DIV. 60, 61
Agency—Foote, Cone & Belding

MOHAWK AIRLINES, INC. 97
Agency—Farquhar & Co., Inc.

MOTOR GENERATOR CORP. 75
Agency—Ralph Dalton & Assoc.

GEORGE L. NANKERVIS CO. 106
Agency—St. Claire Adv.

NAPIER ENGINES, INC. 84
Agency—Hillen J. Smith Co.

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Agency—Fletcher Richards, Calkins & Holden

NORTH CENTRAL AIRLINES, INC. 68
Agency—Klau, Van Pietersom, Dunlap, Inc.

NORTHEAST AIRLINES, INC. 22
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OZARK AIR LINES, INC. 95
Agency—Katzif, George, Wemhoener Adv. Co.

PACIFIC AIR LINES, INC. 116
Agency—Grant Adv., Inc.

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PIEDMONT AIRLINES 104
Agency—Liller, Neal, Battle & Lindsey, Inc.

PORTLAND CEMENT ASSOC. 8, 9
Agency—J. Walter Thompson Co.

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Agency—Campbell-Ewald Co.

PURITAN COMPRESSED GAS CORP. 99
Agency—Richard Lane & Co.

RADIO CORP. OF AMERICA, INDUSTRIAL ELECTRONIC PROD. 35, 36
Agency—Al Paul Lefton Co., Inc.

RIDDLE AIRLINES, INC. 59

ROLLS-ROYCE, LTD. 88
Agency—The Wesley Assoc., Inc.

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Agency—Adams & Keyes, Inc.

S.N.E.C.M.A. (SOCIETE NATIONALE D'ETUDE ET DE CONSTRUCTION DE MOTEURS D'AVIATION) 81

SOUTHERN AIRWAYS, INC. 89
Agency—Harris & Weinstein Assoc.

SPERRY PHOENIX CO., DIV. OF SPERRY RAND CORP. 155
Agency—Reach, McClinton & Co.

SUD AVIATION 93

SUN AIR ELECTRONICS, INC. 17
Agency—Tally Embry, Inc.

SUNDSTRAND AVIATION DIV. OF SUNDSTRAND CORP. 2
Agency—Howard H. Monk & Assoc., Inc.

TRANS-CANADA AIR LINES 86
Agency—McCann-Erickson Ltd.

TRANS-TEXAS AIRWAYS 78
Agency—Erwin Wasey, Ruthrauff & Ryan, Inc.

TRANS WORLD AIRLINES, INC. 12
Agency—Foote, Cone & Belding

UNITED AIR LINES, INC. 28
Agency—N. W. Ayer & Son, Inc.

VAPOR HEATING CORP. 21
Agency—William Hart Adler, Inc.

WEST COAST AIRLINES, INC. 79
Agency—Miller, MacKay, Hoeck & Hartung, Inc.

WESTERN AIR LINES, INC. 14
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WILCOX ELECTRIC CO., INC. 11
Agency—Valentine-Radford Adv.

EN ROUTE

By WAYNE W. PARRISH

A Sightseer's Paradise . . . Africa's Victoria Falls

One of the great rivers of the world is the Zambezi. It rises in Northern Rhodesia and flows south and east through eastern Angola, then becomes the border between Northern and Southern Rhodesia. On its last stage to the Indian Ocean it crosses Portuguese East Africa, a country also known as Mozambique.

There is heavy seasonal rainfall over much of the 140,000 square miles (about equal to Montana) drained by the mighty Zambezi. Under any circumstances, the river is impressive through its 1725 mile length, but it is noteworthy for one thing in particular. Some 975 miles before it reaches the ocean, and at an altitude of just under 3000 feet, the big river takes a mighty plunge and in so doing it creates one of the most glorious and awesome sights of nature to be found on earth.

No white man had ever laid eyes on this lovely sight until November 16, 1855 when Dr. Livingstone arrived there on one of his expeditions. He was fascinated. So is everyone who treks to the heart of Africa to this mecca of sightseers called Victoria Falls.

King-size Niagara

The maximum width of tumbling water is a mile. The mean height is 304 feet. Victoria Falls are twice as high and one and a half times as wide as Niagara, and the only comparable sight I've seen is Iguassu Falls on the Brazil-Argentine border far back in the hinterland of South America.

It is difficult to comprehend the amount of water at Victoria. The maximum flow in April and May is estimated at 12 million cubic feet, or *75 million gallons per minute*. When I was there in the "dry" season last November the locals apologized profusely for the "low" three or four million gallon-per-minute flow, but since I was tremendously impressed by what I saw I can scarcely conceive what it must be like at its annual peaking.

Thousand-foot spray

Even at the low season the spray shoots up hundreds of feet. At maximum it goes as high as a thousand feet. Even in November, walking along the rim opposite the falls, it was like being in a heavy rain. The spray was so dense at some points that the falls were completely obscured.

Only from the air can you get an overall view, and only an aerial photograph can portray just what happens to the Zambezi. It falls into a chasm which it has carved out in zig-zag fashion through the centuries. It is a peculiar act of nature, but it can be seen at close hand by many walks along the opposite rim, and you can even get close to the brink by boat services on the upstream side.

Visiting the falls was a delightful experience. For one thing, it gave me a chance to fly on Central African Airways on a two-day excursion north from Johannesburg, a distance of 600 miles. CAA is managed by able Max Stuart-Shaw at Salisbury, Southern Rhodesia. I can testify that the CAA Viscount service is as good as it comes anywhere, and by that I mean that it is very good indeed.

I was also impressed by CAA people. Certainly W. L. G. Butt, the area sales manager for South Africa, headquartered in Johannesburg, who went far out of his way to extend any number of courtesies (such as taking me to and from the airport a half dozen times), is a knowledgeable and experienced airline man.

Nevil Parkins, the CAA agent at Jan Smuts Airport at Johannesburg, is a live wire who watches his own airline's interest like a hawk. And at Livingstone, at the falls, J. H. Slater is more than a personable airline man—he's part and parcel of the community and is active in helping to promote tourism for the area.

Primitive and undeveloped as is much of Africa you'd never know it from Central African's efficient and thoroughly modern operation. Incidentally, I noted with interest that CAA sells advertising space on the front cabin bulkhead. Not a bad idea for additional revenue. One was a Shell ad and the other was for cigarettes. Neither was obtrusive or overly commercial. Some U.S. airlines advertise themselves in cabins, some on the backs of seat covers, but why not some tasteful consumer advertising?

There was still another delight at the falls—the Victoria Falls Hotel, about a mile away from, but in view of, the falls. It isn't often these days that you find a really solid old-fashioned English hotel, run in the old manner, and just reeking of conservatism, tradition and discipline.

It is a rambling sort of place with many rooms and a big veranda and terrace. In the big seasons it is jammed and advance reservations are essential, but in November it wasn't crowded and was a perfect place for a rest.

I'd like to try and describe the dining room because these things just don't exist much any more. Naturally, being English and colonial, it operates with rigid punctuality for dining hours. It is one very large and long high-ceiling room, a virtual sea of light grey and white—and spots of black. Overhead fans whirl quietly. The tablecloths are of fine linen and every chair has a white cover. There are flowers on each table.

Standing at attention are black native waiters dressed in white, with white caps, all well trained in typical British manner. The maitre d' operates from a desk at the entrance and each patron is assigned a table for the duration of his stay. It was all so immaculate and orderly.

Not fancy, but filling

The food was typically British, adjusted for the subtropical area. A lot of people scorn simple English food, but I have always liked it and I could get along fine at the Victoria Falls Hotel for weeks, although I'd probably gain weight from the starches.

I had Irish stew, for example, not much meat and quite starchy, marrow, cabbage and potatoes, and pineapple fritters for dessert. It was nothing fancy, no place for a gourmet, but you certainly can't starve. The hotel rooms are quite adequate and I suppose many people would call the place stuffy and dull, but for me I thought it was, as I said before, a delightful experience.

There is no shortage of wildlife in the area and some of it can get pretty bold. I was sitting on the terrace having tea late one afternoon and the waiter had just brought me a piece of cake. I had noticed some Vervet monkeys hanging around but at the moment my attention was elsewhere.

All of a sudden I heard some people nearby yell and at the same moment I became aware of movement coming toward me. A big Vervet monkey had had his eyes on my cake and was making a wild dash for it. I grabbed the plate just in the nick of time and shooshed the animal away. Gotta watch those local inhabitants, they'll steal the shirt off your back.

Which leads me up to the next installment—my low-level airplane flight early in the morning up the Zambezi looking for, and finding, lots and lots of wildlife. Tell you about it next issue. ■

AERIAL VIEW (left) of part of the mile-width falls. On the right: looking up the chasm during minimum-flow season. Photographs by WWP.

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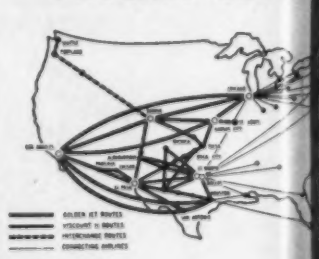
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